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AN UPDATE ON FIRSTNET

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS,
TECHNOLOGY, INNOVATION, AND THE INTERNET
OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

JULY 20, 2017

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

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C O N T E N T S

	Page
Hearing held on July 20, 2017	1
Statement of Senator Wicker	1
Statement of Senator Schatz	2
Statement of Senator Nelson	34
Prepared statement	34
Statement of Senator Hassan	36
Statement of Senator Klobuchar	40
Statement of Senator Markey	43
Statement of Senator Inhofe	46
Statement of Senator Booker	49

WITNESSES

Curtis Brown, Deputy Secretary, Homeland Security and Public Safety, Commonwealth of Virginia	3
Prepared statement	5
Damon Allen Darsey, MD, Medical Director, Mississippi Center for Emergency Services, University of Mississippi Medical Center	10
Prepared statement	12
Mark L. Goldstein, Director, Physical Infrastructure Issues, United States Government Accountability Office	16
Prepared statement	18
Chris Sambar, AT&T Senior Vice President, FirstNet, AT&T Inc.	22
Prepared statement	23
Michael Poth, Chief Executive Officer, First Responder Network Authority (FirstNet)	26
Prepared statement	27

APPENDIX

Response to written questions submitted to Chris Sambar by:	
Hon. John Thune	57
Hon. Roger F. Wicker	57
Hon. Roy Blunt	61
Hon. Bill Nelson	62
Hon. Gary Peters	63
Hon. Catherine Cortez Masto	64
Response to written questions submitted to Michael Poth by:	
Hon. John Thune	64
Hon. Roger F. Wicker	65
Hon. Deb Fischer	69
Hon. Ron Johnson	70
Hon. Bill Nelson	70
Hon. Gary Peters	71
Hon. Catherine Cortez Masto	72

AN UPDATE ON FIRSTNET

THURSDAY, JULY 20, 2017

U.S. SENATE,
SUBCOMMITTEE ON COMMUNICATIONS, TECHNOLOGY,
INNOVATION, AND THE INTERNET,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10 a.m. in room SR-253, Russell Senate Office Building, Hon. Roger Wicker, Chairman of the Subcommittee, presiding.

Present: Senators Wicker [presiding], Blunt, Fischer, Inhofe, Schatz, Nelson, Klobuchar, Blumenthal, Markey, Booker, Hassan, and Cortez Masto.

OPENING STATEMENT OF HON. ROGER F. WICKER, U.S. SENATOR FROM MISSISSIPPI

Senator WICKER. It is precisely 10 a.m. Good morning, and the Subcommittee will come to order.

Today, the Subcommittee meets for an update on FirstNet and its exciting efforts to deploy the nationwide, interoperable public safety broadband network. I am glad to convene this hearing, and I look forward to the attendance in just a moment or two from my good friend, and Ranking Member, Mr. Schatz.

In 2012, Congress created the First Responder Network Authority to lead the development of a nationwide, interoperable public safety broadband network in the United States. Following the communications failures that plagued recovery efforts during 9/11, and other national emergencies, including Hurricane Katrina, there was, and still is, a clear need for a reliable communications network to support the essential work of our public safety officials. Such a network would improve coordination among first responders across multiple jurisdictions and enhance the ability of first responders to provide lifesaving emergency services quickly.

Last year, this Subcommittee convened for an update on FirstNet's progress in establishing the public safety broadband network. At that time, we heard from FirstNet about how it intended to address the unique and individualized needs of each state in deploying the radio access network. FirstNet also reiterated its commitment to providing reliable coverage to rural areas, an issue near and dear to my heart and to a number of members of this subcommittee. FirstNet assured members of the Subcommittee that user fees would be reasonably and affordably priced for public safety users—two issues of great importance to first responders around the country.

Since that time, much has happened. Last November, FirstNet opened an Innovation and Test Lab to develop and test new devices and applications that could be used by first responders on the future public safety network. In March, FirstNet formally selected AT&T as its industry partner to build, operate, and maintain the network over the next 25 years. And last month, FirstNet issued the initial state plans, which detail its deployment proposals for the radio access network in each of the states and other jurisdictions. States are now reviewing these plans and providing feedback to FirstNet and AT&T before the finalized plans are issued in the fall.

Today, I look forward to hearing more about each of these actions. I am eager to learn about FirstNet and AT&T's network buildout plans and how they will leverage existing infrastructure assets within states to maximize coverage in rural areas and save taxpayer dollars. I hope our witnesses will also address the development of subscription pricing plans for public safety officials to use the network and how those plans are being developed in coordination with the states.

Likewise, I look forward to hearing about the resiliency of the network, in particular, how FirstNet and AT&T will harden and secure it from potential cyber threats, natural disasters, and other unplanned events. Additionally, I am interested in how FirstNet and AT&T will incorporate feedback from the states before the initial plans are finalized.

By any estimation, the development of this nationwide public safety broadband network is a challenge. But it is an important endeavor to ensure that first responders can fulfill their daily mission to save lives. At the center of this effort is the courage of our Nation's first responders, who put their lives on the line every day in my state of Mississippi, in Senator Schatz's state of Hawaii, and across the Nation to protect our families, neighborhoods, and communities. They deserve a network that is interoperable, reliable, and secure.

I welcome all of our witnesses today. They include: Mr. Curtis Brown, Deputy Secretary, Office of the Virginia Secretary of Public Safety and Homeland Security; Mr. Damon Darsey, Assistant Professor, University of Mississippi Medical Center; Mr. Mark Goldstein, Physical Issues Director, Government Accountability Office; Mr. Michael Poth, Chief Executive Officer, FirstNet; and Mr. Chris Sambar, Senior Vice President, AT&T.

Thank you all for being here, and I'm delighted at this point to recognize my friend and Ranking Member, Senator Schatz.

**STATEMENT OF HON. BRIAN SCHATZ,
U.S. SENATOR FROM HAWAII**

Senator SCHATZ. Thank you, Mr. Chairman, and thank you to our witnesses for being here.

In 2012, when Congress created FirstNet, we made an important commitment to public safety. At the time, we knew from the tragedies of September 11 and Hurricane Katrina that our first responders faced glaring communications problems. They often couldn't communicate with one another in an emergency. We also knew

that these problems could be solved with a nationwide, interoperable public safety communication network.

Today, we are closer than ever to making that solution a reality. With FirstNet, firefighters will be able to download the blueprint of a burning building before they enter. A police officer arriving at a scene can run a background check or get pictures of a suspect by accessing a Federal law enforcement database. Most importantly, emergency personnel will not be competing with commercial users for bandwidth. They will have priority on this network, which will be built and hardened to public safety specifications. It will have ruggedized and competitive devices and specify public safety applications.

So there's no doubt that FirstNet will revolutionize public safety communications for decades to come, but it's also a huge task. This is the first time we've done anything like this. FirstNet staff and the Board have made good progress since our hearing last year. We now have a vendor, AT&T, that brings assets that go beyond what FirstNet envisioned. FirstNet and AT&T have delivered plans to each state 3 months ahead of schedule. Five states have already opted in to FirstNet and many are in the review process. We hope that as states and first responders learn more about the value of this network, they will choose to participate.

Many of us represent rural and remote areas of this country. These communities already suffer from a lack of adequate access to commercial broadband services. So it's critical that FirstNet and AT&T address this challenge headon so that every first responder in all parts of our country benefit from the new network. FirstNet and AT&T have a responsibility to ensure that the specific needs of all states and territories are respected throughout all aspects of this program, from deployment to operations and management.

Once each state has made its final decision on how to participate, FirstNet, AT&T, and their partners can begin in earnest to build the network that delivers on the promise that Congress made to the public in 2012.

I want to thank the witnesses for appearing before the Committee, and I look forward to the testimony.

Senator WICKER. Thank you, Senator Schatz, and I think the attendance today reflects the importance of this topic and also the interest of Americans in this exciting new chapter.

If it's all right, we'll take the testimony in this order. We'll sort of go from one end of the table to the other, and then we'll end up in the middle. How's that?

So, Mr. Brown, you are recognized to go first.

**STATEMENT OF CURTIS BROWN, DEPUTY SECRETARY,
HOMELAND SECURITY AND PUBLIC SAFETY,
COMMONWEALTH OF VIRGINIA**

Mr. BROWN. Thank you and good morning, Chairman Wicker, Ranking Member Schatz, and members of the Committee. On behalf of Governor Terry McAuliffe and Secretary of Public Safety and Homeland Security, Brian Moran, I would like to thank you for this opportunity to discuss FirstNet and Virginia's efforts to ensure first responders have the emergency communication capabilities necessary to respond to all hazards.

Last week, the Governor was proud to announce that Virginia was the first state in the Nation to opt-in to FirstNet. Virginia opted in to provide current AT&T public safety subscribers with the benefit of priority services now at no cost to the Commonwealth, as well as to greenlight the buildout of Virginia's portion of the national public safety broadband network.

We believe that decision to opt-in will promote competition within the public safety communications marketplace that will reduce costs and drive innovation across all carriers. Opting out was considered, but the unknown costs and risks associated with deploying and operating the network was not feasible. Virginia has long been a leader in the field of interoperability for public safety, and the decision to opt-in continues that trend.

Our unique geography and critical infrastructure requires a robust public safety and homeland security program to prepare for a wide range of potential threats, from terrorism to hurricanes. Therefore, it is vital that our public safety professionals are equipped with the tools needed to save lives. Since the attacks of 9/11, Virginia public safety leaders have helped to develop the governing structure and policy positions needed so that lessons learned related to interoperable emergency communications during that tragic day are implemented.

Many of the people who stood on stage last week during the ceremonial signing of the Governor's opt-in letter assisted with the response on 9/11 at the Pentagon in Arlington. I'm joined here today by my colleagues from Virginia who have been instrumental in our effort to engage Virginia public safety stakeholders, including law enforcement, fire, EMS, and emergency management.

Megan Peterson, our Homeland Security Resilience Group Staff Director; Tom Gagnon, our State Point of Contact; and Asif Bhavnagri, have been instrumental in our efforts to review FirstNet documents and engage stakeholders. Fire Chief Emeritus Charles Werner from Charlottesville is recognized as a national leader on the subject of emergency communications and innovation for public safety. Terry Hall serves as our state Interoperability Executive Committee chair and was past president of APCO. Both of these gentlemen have lent their expertise and years of service to improve emergency communications in Virginia and nationally.

Therefore, Virginia's decision to opt-in and to opt-in now was based on years of study, outreach, and collaboration with our public safety stakeholders, FirstNet, and now with AT&T. Moving forward, we will work with FirstNet and AT&T to maximize the benefit of the network for the Commonwealth's public safety community.

Essential to this collaborative effort is our commitment to ensuring adequate coverage, especially for our responders in rural communities. It is also critical to expedite the effort to provide mission critical voice and advance the schedule for enhanced location capabilities to 2019 in order to adequately protect our men and women in uniform.

As Governor McAuliffe mentioned last week, our opt-in decision marks another significant step forward in advancing broadband capabilities for public safety. But our work continues. As more states determine their best way forward, I know that, collectively, we will

continue to provide feedback to Congress, FirstNet, and AT&T. Working together, we can finally realize the ultimate goal of furthering interoperable emergency communication and creating a safe, secure, and reliable network for public safety.

Thank you again, and I look forward to answering any of your questions.

[The prepared statement of Mr. Brown follows:]

**PREPARED STATEMENT OF CURTIS BROWN, DEPUTY SECRETARY,
HOMELAND SECURITY AND PUBLIC SAFETY, COMMONWEALTH OF VIRGINIA**

Introduction

Chairman Wicker, Ranking Member Schatz, and distinguished members of the Subcommittee, thank you for the invitation to appear before you today to discuss furthering the effort to enhance emergency communications for public safety. I bring you greetings on behalf of Governor Terence R. McAuliffe the 72nd Governor of the Commonwealth of Virginia, and Virginia's first Secretary of Public Safety and Homeland Security Brian Moran. Governor McAuliffe and Secretary Moran, along with Virginia's public safety professionals on the state and local levels, are proud that Virginia has become the first state in the Nation to opt-in to FirstNet's National Public Safety Broadband Network. Last week, the Governor was joined at FirstNet Headquarters by public safety personnel from law enforcement, fire, EMS, and emergency management who hailed the decision as a continuation of Virginia's leadership in the advancement of public safety interoperable communication. We see this as critical to our ability to provide public safety with the tools they need to carry out their mission and protect lives in the event of an emergency.

Virginia did not arrive at the decision to opt-in haphazardly. For many years, since the tragic events of 9/11, Virginia public safety professionals have been actively engaged in the efforts to improve emergency communications and fully leverage the technological advancements of mission-critical broadband. A coordinated and collaborative approach with local government public safety representatives was utilized to make sure that the decision was informed by the individuals who are the subject matter experts for public safety communication and stand on the frontlines of all-hazard emergency response. The decision to opt-in was based on the desire to ensure as quickly as possible that public safety is able to leverage the benefits of priority and preemption service, as well as to prevent costs to the Commonwealth, and move forward with the collaborative process of building the network to meet the Virginia-specific needs of public safety.

Integrated and Collaborative Emergency Response

When a major incident or disaster occurs the resources of one jurisdiction are quickly overwhelmed. These types of events necessitate coordination among all surrounding jurisdictions. Integrated response thus requires disparate public safety agencies to be able to communicate with each other. Virginia is committed to doing everything possible to save the lives of citizens, support emergency response, and protect our public safety responders.

The attacks on 9/11 highlighted the inability of first responders to communicate with one another. Lives were lost due to incompatible and inadequate technology. Virginia experienced this with the attack on the Pentagon in Arlington. The Pentagon response involved four preeminent jurisdictions: Arlington County, Fairfax County, the City of Alexandria and the District of Columbia. Each jurisdiction used its own radio channel for communication and had no way to communicate with each other despite teams being deployed to work on the same tasks. Cellular telephones were useless within the first few hours because the towers were inundated and cellular priority access service was not provided to emergency responders.

FirstNet and the Nationwide Public Safety Broadband Network are the result of the 9/11 Commission's recommendation. The goal was, and is today, to ensure continued and interoperable communication among our first responders during a disaster or other large-scale event. Now, nearly 16 years later, Virginia has helped make this a reality in the Commonwealth by opting-in to the Nationwide Public Safety Broadband Network.

Overview of Virginia

The unique geography and infrastructure of the Commonwealth of Virginia enhances our risks to the many hazards we face. Over 8.4 million people reside in Virginia. The population is largely concentrated in the eastern corridor of the state, in-

cluding the Hampton Roads and Richmond metro areas, with the largest concentration in Northern Virginia. However, a significant portion of the state is rural.

The geographic diversity of the mountains in the west and the 3,315 miles of shoreline along the eastern border creates the opportunity for many natural hazards. The entire state is vulnerable to hurricanes, tropical storms, and flooding, as well as the potential for tornadoes and earthquakes. The mountainous western portion of the state is susceptible to wildfires, and both the western and northern portions of the state experiences severe winter storms. In 2016, the Commonwealth experienced the fourth largest snowstorm in the last century, the deadliest tornado event in Virginia since 1959, and multiple hurricane and flooding events that produced record amounts of rainfall and flooding.

Virginia's proximity to the Nation's capital, and the fact that it is home to many Federal agencies and more than two dozen military installations with the second largest military presence in the nation, make it a prime target for terrorist activity and cyber attacks. Virginia is rich in economic and defense infrastructure including the world's largest naval base, the biggest Internet exchange point in the world, the fifth largest U.S. port, the Nation's only manufacturer of nuclear naval aircraft carriers, and one of only two nuclear submarine manufacturers. As such, homeland security a major priority here in Virginia.

The Commonwealth partners with federal, state, and local public safety entities to ensure a collaborative response to incidents that brings together all capabilities for a quick and integrated response to emergencies and disasters. From the evolving threat of terrorism to extreme weather caused by the changing climate and rising sea, Virginia's public safety community must be prepared for all hazards.

Combined, there are thousands of public safety agencies at the local, county, state, and Federal levels in Virginia that are potential users of the Nationwide Public Safety Broadband Network.

- *Law Enforcement and Corrections:* Virginia has approximately 370 law enforcement agencies and 24 prison/detention facilities. In March 2017, there were a total of 21,838 law enforcement officers employed in various state and local agencies. In addition, the state has a total of 7,268 correctional officers working in state, county, and private detention centers and prisons throughout the state.
- *Fire Service:* Virginia is home to 730 career and volunteer fire departments and has approximately 38,000 certified firefighters across the state. Fire Service personnel responded to 28,562 fires in 2016.
- *Emergency Medical Services (EMS):* In 2016, Virginia had 34,000 licensed EMS providers operating throughout the state that answered nearly 1.5 million EMS incident calls for service. There are currently 22,772 Certified Emergency Medical Technicians and 6,296 Certified Paramedics in the Commonwealth of Virginia.
- *Emergency Management:* Each of the 134 counties and cities in Virginia has an emergency manager, along with the several large towns.
- *Secondary responders:* Beyond the traditional first responders described above, this network will likely support non-traditional agencies such as those related to transportation, public works, and utilities. These agencies may be permitted to use the network on a secondary basis and would contribute to emergency response in the event of an incident that required their services, such as the clearing of roads or restoration of power.

Current Use of Technology

Many public safety agencies within the Commonwealth of Virginia currently use data applications via vehicle mounted mobile data devices, ruggedized computers, as well as handheld devices and smartphones. Some of these applications operate over legacy private Land Mobile Radio (LMR) networks, while the majority utilize commercial 3G and 4G services. Applications in use today include, but are not limited to: Inter/Intranet access, Automatic vehicle location (AVL), access to local networks via a virtual private network (VPN), computer-aided dispatch and records management systems, sharing of reports and photos, access to criminal database information, automotive and driver license checks, weather reports, river-level monitoring, aerial and scene video, applications supporting the Incident Command System (ICS), Intelligent Transportation System (ITS) applications, such as traffic cameras and road signage, messaging, geospatial access for mapping and infrastructure plans, and systems management/monitoring tools.

In addition to the vehicle-mounted devices, users would also utilize handheld and tablet devices to access these types of applications as well as voice, text, VoIP, video services, and group communications.

Virginia's Decision Making Process

Engagement with FirstNet & AT&T

Virginia has been engaged on this issue from the very beginning. Since FirstNet was created, Virginia has been in continuous contact with the agency; there have been countless meetings, briefings, calls, and e-mails. Virginia's SPOC has ensured continued communication throughout the process so that Virginia remained informed of developments as they occurred.

Since the announcement of FirstNet and AT&T's public/private partnership, Virginia's SPOC has facilitated numerous briefings for Virginia public safety leaders and the Commonwealth's senior leadership in the Governor's Office and the Attorney General's Office.

Engagement with Stakeholders

Thanks to the State and Local Implementation Grant Program, Virginia has held over 60 state, regional, and local engagements with our stakeholders to make sure they are informed and involved in the process. These meetings engaged subject matter experts to help identify Virginia's needs and priorities. This process helped to ensure state and local officials outside of public safety understood the role of FirstNet and the implications it would have on them.

Presentations were neutral regarding the opt-in/opt-out decision in order to elicit feedback that would enable an effective evaluation of each course of action.

By highlighting certain aspects such as rural coverage, network construction timeline, and the requirement to maintain LMR systems, these presentations helped manage expectations and enabled stakeholders to begin contemplating the advantages and disadvantages of subscribing to the network in the future.

FirstNet was encouraged to be involved in these stakeholder meetings and consistently participated. This facilitated the rapid transmittal of feedback from the field to FirstNet headquarters.

Engagement with Other SPOCs

Virginia's perspective has always been, that in order for this to truly be a Nationwide Public Safety Broadband Network, states must work together to ensure the network meets everyone's needs. To this end, Virginia hosted a regional meeting with the Single Points of Contact from six states—both nearby and across the country—as well as the District of Columbia. This meeting produced valuable data and best practices to inform the plan evaluation and decision processes. It also served to allow states' subject matter experts to discuss their concerns and experiences, which were compiled and provided as feedback to FirstNet. This feedback directly contributed to the additional information states received after the FirstNet/AT&T SPOC conference in Dallas, TX at the beginning of July.

Statewide Interoperability Executive Committee

In 2016, a Statewide Interoperability Executive Committee (SIEC) was reconstituted with 33 representatives from state agencies, tribal nations, the seven Regional Preparedness Advisory Committees for Interoperability, and key professional organizations including, the VA Association of Campus Law Enforcement, VA Association of Public Safety Communications Officials, VA National Emergency Number Association, VA Chiefs of Police Association, VA State Police Association, VA Association of Governmental EMS Administrations, VA Sheriffs Association, VA Fire Chiefs Association, VA State Fighter Association, State Council of Higher Education, VA Professional Firefighters Association, VaLITE, VA Association of Counties, VA Municipal League, Amateur Radio Emergency Service, and the Virginia Military Advisory Council.

The SIEC provides guidance to the state on interoperability throughout Virginia and was integral in developing the state plan vetting and recommendation process. These meetings helped ensure Virginia's public safety communications leaders were kept up-to-date on the latest developments pertaining to FirstNet's Request for Proposal process, and state plan development and release.

Request for Information (RFI) Review

Virginia issued a Request for Information to ensure our ultimate decision was fully informed. Six responses were received and they were reviewed by both the Office of the Secretary of Public Safety and Homeland Security and the Office of the Secretary of Technology. The responses did not contain information to convince the state that opting-out was a viable endeavor Virginia should undertake.

State Plan Review

All of the engagements above served to inform Virginia's review of the state plan. Before the portal was accessible, the Office of the Secretary of Public Safety and Homeland Security, the Virginia Information Technologies Agency, the Virginia Department of Emergency Management, the Office of the Attorney General, the Office of the Secretary of Commerce and Trade, the Department of General Services, the Virginia State Police, and the Statewide Interoperability Executive Committee were informed of their role in the state plan review process. Over 100 individuals from localities and state agencies have been given access to the state plan portal. It was our view that widespread engagement was essential to a thorough review of the plan.

Once the plans were accessed and reviewed, Virginia was surprised that the information contained in the plans turned out to be a lot of the same information that FirstNet and AT&T had already provided. There was no significant information to analyze. Besides the state coverage map and local data, most of the information is similar to the public site.

Decision to Opt-In

Governor McAuliffe has decided to opt-in and opt-in now because it is the best decision for public safety in Virginia.

Virginia Public Safety is Now Better Off

Opting-in now provides Virginia public safety personnel with an additional tool in the tool belt. Because AT&T is making available network capacity on all of its existing LTE bands, ahead of LTE deployment on FirstNet's 700 MHz Band 14 spectrum, public safety agencies who are current AT&T subscribers will have priority access on the network. This will be invaluable in the event of a crisis or emergency situation. Numerous public safety agencies in Virginia including those in Fairfax County are current AT&T subscribers. Ensuring that our first responders have the right tools and resources available to do their jobs is a key component of a safe and secure Virginia.

This decision will undoubtedly stimulate competition among all wireless carriers, which will benefit public safety economically and influence further improvements for the network. Competition also drives innovation and we want to make sure our responders are in the best position to do their jobs effectively, maintain situational awareness, and communicate within and across jurisdictions.

No Cost to the Commonwealth

Opting-in costs the Commonwealth nothing. Priority access on the network comes at no additional financial cost to subscriber nor to the Commonwealth. Opting-in does not commit the Commonwealth to any role in the FirstNet buildout. FirstNet and AT&T will build, operate, and maintain the Commonwealth's portion of the National Public Safety Broadband Network at no cost to Virginia.

There is no requirement for state agencies or localities to use the network or switch carriers, rather opting-in provides the option and benefits to those who do. State and local agencies still have the decision-making power to decide which carrier works best for them based on coverage, reliability, cost, etc.; this tool simply adds to that analysis.

Opting-In Now Provided Benefits that Waiting Did Not

It was Virginia's assessment that the lack of specific information in the plan, in combination with the statutory constrained timeline, made it clear that this draft plan was in fact the ultimate, final state plan. This assessment is supported by the fact that because the Nationwide Public Safety Broadband Network will be self-sustaining, negotiating additional services means subtracting services from another state. This reality solidified Virginia's decision to opt-in now; there were only benefits to doing so, and none for waiting.

Opt-Out Consideration

Opting out would have required accepting the unknown associated costs and risks for the ongoing deployment, operation, maintenance, and improvement of the network within the Commonwealth, which must be maintained in accordance with FirstNet's policies. Virginia would have had to oversee the buildout of a highly technical broadband wireless network and assume all responsibility, liability, and fiscal accountability, maintenance, and management of users and customer care.

The cost of what it would have taken to construct, maintain, and operate a public safety dedicated broadband network in the Commonwealth, that is interoperable with the National Public Safety Broadband Network and matches the quality of service, is unknown. No one has been able to assess the cost and unfortunately any

profits from the network would have had to be reinvested in the network and would not have been able to serve as a revenue source for the state.

Based on the legislative constraints, in particular the time constraints, thoroughly vetting an opt-out proposal, to the extent necessary, was not realistic. Choosing to do so would have put the Commonwealth in untenable, ambiguous position. Opting out would have delayed the benefits of network access to Virginia's first responders for an unacceptable time, perhaps as much as two years.

Virginia Specific Constraints

Virginia is the only state in the Nation with a limit on consecutive gubernatorial terms. This puts Virginia in the unique position of a guaranteed administration change every four years. Moreover, Governor McAuliffe's term will end in January 2018. Making Governor McAuliffe, along with Governor Chris Christie, the only two to face this decision at the end of an administration. Attempting to oversee and execute a project of this magnitude and ambiguity within this context would have put the state on unsolid ground.

In addition, the Commonwealth is particularly and disproportionately affected by sequestration. Virginia has the second most Federal civilian employees and is the number one recipient of Department of Defense spending. The effects of the 2013 sequestration resulted in less economic activity, lower-paying jobs, and less revenue for the Commonwealth. Since taking office, Governor McAuliffe has focused on building a New Virginia Economy, one that is aimed at private sector job growth and less reliant on Federal spending. These changes, however, take time. All of which means, Virginia is not in the fiscal position at this juncture to fund an extremely expensive project, whose cost is ultimately unknown.

Virginia's Path Forward

Continued Collaboration with FirstNet and AT&T

We are continuing to work with FirstNet and AT&T to ensure we are able to maximize the benefits of the network to support the Commonwealth's public safety. This is just the beginning and there are certainly questions that remain; Virginia has no intention of ending discussions with FirstNet and AT&T.

Continued Engagement with Stakeholders

Virginia will continue to work with local partners to provide feedback to FirstNet and AT&T in order to ensure a viable network that will enhance public safety communications throughout Virginia. Dialogue with stakeholders has provided FirstNet and AT&T with insight as to Virginia's expectations for the network and the Commonwealth will continue to work closely with them to provide feedback and look ahead to enhancements that will build on its current success.

To this end, during August and September there will be seven regional day-long conferences conducted by Virginia's Single Point of Contact, FirstNet, and AT&T in order to provide the latest information and discuss the future.

Mission-Critical Capability Gaps¹

Virginia understands that the state plans are merely a base-line. As such we will continue to assess the gaps and issues to ensure Virginia has the full coverage and reliability that our first responders need and provide feedback to FirstNet and AT&T. There are capabilities that Virginia has already identified as crucial to the success of this network.

- *Coverage:* The public safety community is well aware that AT&T does not have sufficient rural and small market network coverage in Virginia. Virginia will continue to work with state and local partners to help AT&T identify and bolster its overall coverage.
- *Mission-critical voice:* It is not only the burden of needing multiple devices (one for voice, one for data) that demands this issue be addressed, but each state's economic burden as well, with the desire for new FirstNet data capabilities tempered by the ongoing need to maintain extensive separate voice networks across the same coverage area.

FirstNet's RFP includes a March 2019 milestone for the mission-critical-push-to-talk (MCPTT) technical capability to be implemented in its network, but

¹Charles Werner, Acting Virginia Department of Emergency Management Deputy Coordinator of Disaster Services, has been an integral part of the Virginia's public safety interoperable communications team. The following incorporates his expert opinions as outlined in his article, "FirstNet—Opportunities and Challenges" *National Public Safety and Telecommunications Council* (July 14, 2017), available at <https://blog.npstc.org/2017/07/14/charles-werner-charlottesville-va-fire-chief-emeritus-writes-on-firstnet-opportunities-and-challenges/>.

more information is needed on specific, intermediate milestones for technology development, testing and validation, along with committed resources and actions to achieve those milestones.

- *Mission-critical, enhanced location (with z-axis, vertical capabilities):* Unlike mission-critical voice, enhanced location is a more near-term reality, with known technologies capable of rolling out during the same time-frame as the base FirstNet LTE deployment. These capabilities, including 3D geolocation, situational awareness, and incident management command and control, would be of extraordinary value to first responders, both in finding an emergency caller, by floor, in a high-rise building as well as in protecting their own safety in the event they become disabled or endangered.

The FirstNet board has stated that the contract requires that this capability be available by March 2022, but board members and staff have emphasized the need to implement it sooner, if the technology is ready. In fact, the latest FirstNet roadmap calls for “updated FirstNet location-based services” to be implemented in the network by June 2019. This is a much better timeline for first responders to receive this critical functionality. Deployment timeframes and coverage for each state’s key markets with high-rise building concentrations is needed.

Conclusion

Governor McAuliffe views protecting public safety and supporting first responders as his top priority. Each day, Virginia’s first responders put on their uniforms and leave their families and homes to risk their lives to keep our communities, citizens, and visitors safe. We are thankful every day for their service and sacrifice, and in return, we must continue to do more to protect their safety.

Ensuring that our first responders have the right tools and resources available to do their jobs is a key component of achieving that goal. That is why Virginia is proud to be the first state to officially opt-in to the nationwide public safety broadband network, FirstNet. This innovative technology will improve public safety throughout the entire Commonwealth and better protect our men and women in uniform.

FirstNet’s public safety broadband network marks another significant step forward with these wireless data capabilities. FirstNet and AT&T are committed to working with us to make sure Virginia will have the full coverage that our first responders need. We will continue to work closely with them to provide feedback on the network and look ahead to enhancements that will build on this current success.

Virginia intends to not only lead the Nation in the support and deployment of the FirstNet broadband network, but also in support of the safety of its citizens and first responder community.

Thank you again for the opportunity to testify today and your support for our first responders.

Senator WICKER. Thank you very much.

And now, Dr. Darsey, Assistant Professor at the University of Mississippi Medical Center in Jackson, you are recognized for 5 minutes.

STATEMENT OF DAMON ALLEN DARSEY, MD, MEDICAL DIRECTOR, MISSISSIPPI CENTER FOR EMERGENCY SERVICES, UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

Dr. DARSEY. Good morning. Chairman Wicker, Ranking Member Schatz, members of the Subcommittee, thank you for the opportunity to testify regarding FirstNet and its challenges and opportunities specifically in the medical arena.

I’m Damon Darsey. I’m an emergency physician by trade, public safety by background and passion. I serve as the Medical Director for the Mississippi Center for Emergency Services, the University of Mississippi Medical Center’s umbrella organization that looks at research, clinical care, and coordination of that care in rural parts of our state.

As many of you know, and as really well published, Mississippi has challenges in healthcare, unlike many other states, challenges

that are with accident rates, with chronic disease, with location of providers, and with limited providers as our state progresses forward. The integration of a reliable public safety broadband network is vital for us to make things happen in Mississippi that we cannot currently do.

Mississippi has been one of the leading states in both telemedicine and public safety communications for a number of years. After Hurricane Katrina, Mississippi developed and deployed the Land Mobile Radio system that now has nearly 30,000 users and has revolutionized the way we practice medicine in Mississippi, from the state trooper on the side of the road and his medical care all the way to the critical care teams that fly in helicopters and ambulances.

In 2010, Mississippi won a Broadband Technology Opportunity Award to overlay broadband data over an existing Land Mobile Radio network. We believe this was a vital next step in 2010 to integrate and improve our healthcare. We still firmly believe that. During the development and deployment of that system, we gained many lessons on how to deploy, develop, and integrate a system to improve public safety and medical care for rural providers.

FirstNet has the potential to meet many of these needs. Many of us in small rural states don't have capacity, or don't have meaningful capacity in rural America, where we need it most in medicine. It's very easy to have coverage outside these doors, but now to have coverage in the middle of nowhere, to be able to provide that lifesaving medical care, or specifically get the patient to where they need to go—whether it's trauma on the side of the road or chronic medical disease, we can keep those patients out of the healthcare system and at home with the same level of care. Much of the same discussion is going on in other rooms today about healthcare. We believe FirstNet and broadband data are vital to that discussion going forward.

As FirstNet has been rolling out, there are many questions that arise from our own experience in deploying a nearly entire network and some technical questions. From the medical perspective, we need reliable public safety grade data communications. That's vital. The biggest questions that we have are all around priority service and preemption.

We in Mississippi have embarked on a unique opportunity for public safety professionals to improve healthcare in our state. One example is a grant we received from Homeland Security Office of Emergency Communications, the Rural Emergency Medical Communication Demonstration Project, where we are actively engaged in collecting data on how to improve going forward.

We talked about BTOP earlier. BTOP has been retooled to now say that we're going to do innovation and R&D network to try to look at the ability to take this same data, and how to transmit it better over a wireless system. We believe this is the vital step for Mississippi and other rural states going forward.

In closing, I appreciate the opportunity to be here and talk about medicine. As I see it going forward, this is the vital link for us in mortality. We have to get innovative in rural America, and this is one of the ways we do it. We hope this Committee in its oversight role will help FirstNet become what we all need, as we help them

as well, in the vast areas of the state that are currently underserved by public safety broadband service.

It's important to note and not to take issue with the large, sensational events that we've talked about, Hurricane Katrina and 9/11. But I challenge you that these events have the same impact on rural America almost weekly. A three-car accident in rural Mississippi, in rural Hawaii, in rural Nevada taxes the same resources as if it were in a larger city, and that's where we need this the most.

The true possibility of FirstNet is to provide the resources to allow local public safety officials to push the boundaries of possibilities—and they are there and we can push them—and do what we do in Mississippi, challenge the norms of a traditional public safety role, to reach out and do things better than we have and things that we've not yet done. FirstNet could allow us to do that.

Thank you for your time.

[The prepared statement of Dr. Darsey follows:]

**PREPARED STATEMENT OF DAMON ALLEN DARSEY, MD, MEDICAL DIRECTOR,
MISSISSIPPI CENTER FOR EMERGENCY SERVICES, UNIVERSITY OF MISSISSIPPI
MEDICAL CENTER**

Chairman Wicker, Ranking Member Schatz and Members of the Subcommittee on Communications, Technology, Innovation and the Internet, thank you for the opportunity to testify today regarding the challenges and opportunities associated with the First Responder Network Authority or FirstNet. My name is Dr. Damon Darsey and I serve as the Medical Director of the Mississippi Center for Emergency Services at the University of Mississippi Medical Center in Jackson.

Public Safety and Medical Voice Communications in Mississippi

Mississippi covers 48,434 square miles and is home to 82 counties, 282 police departments, 82 sheriff departments, 725 fire departments with more than 12,000 fire personal, more than 10,000 certified law enforcement personal, more than 6,000 EMS paramedics and 90 hospitals. Reliable and coordinated communication across agencies and distance is essential if Mississippi is to succeed in responding to the public safety needs of our citizens.

Unfortunately, it took Hurricane Katrina in 2005 to demonstrate our state's severe lack of survivable, secure, interoperable communication. In response, the newly-created Mississippi Wireless Communications Commission built out the Mississippi Wireless Information Network (MSWIN), an interoperable, P25/Phase-2, 700 MHz, Land Mobile Radio (LMR) trunked radio system with 144 towers across the state and a point-to-point microwave backhaul network. While the communications chaos that ensued in the aftermath of Hurricane Katrina was the principal inspiration for MSWIN, the Federal Government's initial contribution of approximately \$157M to this project reflected a nationwide concern about the inability of first responders to effectively communicate after the tragic events of 9/11. The MSWIN system is now operational statewide and provides 97 percent mobile area coverage across Mississippi, allowing state, local, and Federal entities to communicate with each other as events unfold. This system has significantly decreased response time and increased coordination among responders.

Hurricane Katrina also presented an unprecedented medical challenge for the State of Mississippi. Following the hurricane, over thirty percent of the acute care medical facilities in Mississippi were impaired by the storm. Even the University of Mississippi Medical Center (UMMC) in Jackson, well over 100 miles from the coastal impact zone, had sustained force hurricane winds for hours, causing significant damage in the Jackson metropolitan area. The movement of patients out of the large impact zone was done with a manual paper system developed in the moment. Communications challenges significantly impacted medical response and the coordination of patient movement. In response, Mississippi MED-COM was created by the legislature to design and implement solutions for medical communications, leveraging the power of MSWIN. Since that time, MED-COM has been at the crossroads of medicine and technology.

Today, Mississippi MED-COM is a comprehensive transfer and medical communications channel relying more and more on advanced communications technology

to improve coordination among medical providers statewide. Over time, more and more first responders across the state joined the MSWIN network, allowing for further coordination and efficiency in response. As the MSWIN user base grew (See Figure 1), the value of and reliance on the system was clear, making it imperative that more medical users be added.

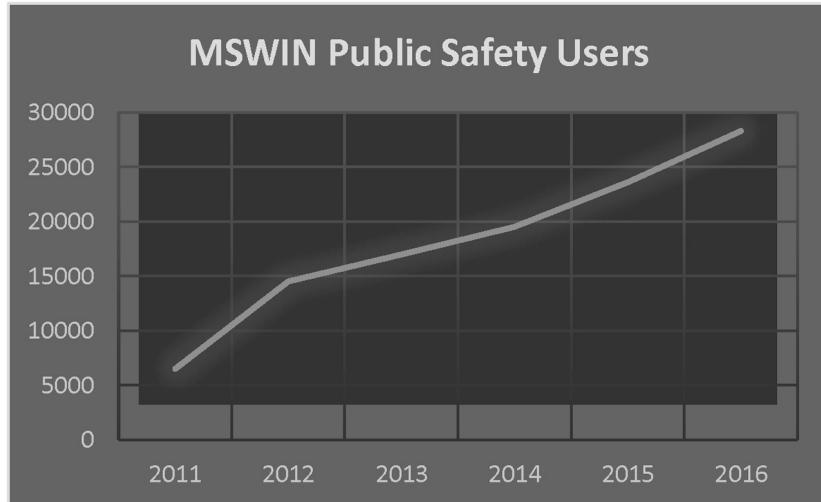


Figure 1: Source Mississippi Wireless Communications Commission

The success of mission critical voice communications in medical response has changed the way medicine is practiced in the pre-hospital environment in Mississippi. Being able to connect a trooper at an accident scene with medical professionals at our hospital, for example, improves outcomes for those patients. Being able to discuss the condition of the patients in real time gives those on scene more ability and confidence to appropriately respond and prepares those in the hospital to receive them on arrival. This improved ability to communicate about patient conditions and treatments is important, but the addition of data and live audio-visual communications will take the proven voice communication system to the next level.

Broadband Medical and Public Safety Communications in Mississippi

In 2009 and 2010, key stakeholders in technology, public safety and medical response started discussing the feasibility of overlaying the MSWIN program with a Long Term Evolution (LTE) data system dedicated exclusively to public safety. In 2010, the State of Mississippi won a \$70M Broadband Technologies Opportunity Program (BTOP) stimulus grant from the National Telecommunications and Information Administration (NTIA) for the deployment of a statewide public safety LTE network and medical telemedicine system for pre-hospital medicine. Mississippi leveraged the assets of MSWIN, including its network equipment, towers, and microwave backhaul to reduce deployment costs and make a statewide system possible. This funding would have allowed Mississippi MED-COM to be the first state in the Nation to expand proven voice medical communications into data transmission.

Building on UMMC's decades of leadership in telemedicine, the BTOP award also included funding to develop the first statewide, standards based telemedicine system for ambulances in the Nation. Currently, UMMC provides telemedicine services to rural and community hospitals all over Mississippi and is a national leader in this field. To date, UMMC Telehealth has sites of service in over 200 locations statewide and has conducted over 500,000 patient visits. Years of practical experience in telemedicine put UMMC in a unique position to lead delivery of advanced mobile medical care in ambulances.

With the creation of FirstNet, Mississippi's original BTOP proposal was no longer considered viable by the Department of Commerce and was not brought to fruition. However, the preliminary work that went into the proposal, the coordination with public safety and the limitations in connectivity that we experienced have produced valuable lessons that may accrue to the benefit of those crafting the national sys-

tem. These are the thoughts I'd like to share with you today regarding system reliability, adequate responder training and ensuring rural coverage.

First Net and Emergency Medicine: Technical Priorities

One of the biggest requirements for the delivery of remote medical care is for the technology to be highly reliable, available and redundant. As technology has improved, the end user's confidence has improved, but challenges remain in terms of reliability and coverage. One limitation we discovered in the development of the mobile ambulance based communications system was that voice over a LTE system is not as clear and reliable as current P25 LMR systems. During the rollout of our system, we included the LMR radio component to ensure that we had access to reliable voice communications with proven reliability and sustainability. I encourage you to consider how these networks can be strengthened to improve reliability for the transmission of lifesaving medical data.

Public Safety LMR communications require redundant and hardened systems, especially for the delivery of medical care in critical times. In April 2014, the Winston County Medical Center in Louisville, Mississippi sustained a direct hit from an EF-3 tornado. As emergency responders descended into the county to support Search and Rescue operations and to evacuate the damaged hospital, it provided a valuable lesson for those responders. Areas around MSWIN LMR towers suffered substantial damage from the tornado, but the towers remained operational and withstood the surge in radio traffic. The nearby commercial cellular towers were either damaged or overwhelmed with capacity or both, leaving many responders depending on their radio for weather reports, maps or directions into the impacted areas. Hardening FirstNet infrastructure is even more important in rural communities where there is no excess capacity and limited infrastructure. For the medical applications that could migrate to FirstNet, the reliance on mission critical communications is vital to the continued development of these technologies and operational protocols. A fear shared by many in the public safety community is that commercial towers will not be built to the same redundancy or resiliency as modern public safety communications systems.

FirstNet and Emergency Medicine: Rural Coverage & Priority and Preemption

Over the past several years, a number of ways to address rural coverage have been proposed. One of the lessons we learned early on in our effort to establish a statewide LTE network is the absolute need to have reliable coverage zones on established maps with real-time communication of outages or coverage limitations. The model we developed for coverage was to leverage the existing population centers and LMR towers and provide additional coverage to the majority of state roads in rural Mississippi.

As FirstNet deploys a nationwide network, rural coverage is vital. Needs related to capacity, preemption and priority may not be served by the population based model currently being contemplated. In rural America, many first responders have very spotty or under capacity coverage. In our own state, with few exceptions, the capacity or coverage is unable to provide consistent coverage and can handcuff public safety response. Last year, for example, the UMMC Public Safety Support Division provided mobile field medical teams to support a large law enforcement mission in Southeastern Mississippi. The medical team used an on-line tool to map the different operational areas, routes, helicopter landing zones, etc. Data service in the previous day's testing proved reliable. As soon as the first arrest was made, however, social media came alive and literally left all data services in the county without capacity, rendering the network useless to law enforcement. Even where there "is" commercial coverage, that coverage often has no surge capacity.

In Mississippi, we seldom have the large train wrecks, terrorist incidents or other large scale events that bring the national media to our door. Those spectacular mass casualty incidents are tragic and horrible, but something of the same impact occurs in our state regularly. Mass casualty incidents (MCI) are simply events where the need exceeds the resources, which occurs on a weekly basis in rural states like ours. In many of our eighty two counties, a two car wreck could be a MCI. The resources are constrained as much or more than an event with ten times the patients in a larger city. The use of technology is one of the only ways we can bridge that resource limitation. The frequency of these events, coupled with constrained budgets and reduced personnel, makes rural America a great place for development, testing and deployment of technology to support medical responders.

FirstNet and Emergency Medicine: Innovation

The challenges of mortality in Mississippi remain significant and public safety partners continue to use innovation to augment and support the emergency respond-

ers across Mississippi. In 2014, UMMC and the Mississippi, Wildlife, Fisheries and Parks partnered to combat the mortality statistics in rural Mississippi. At the time, more people died while enjoying the recreation of the Mississippi outdoors than in most other states. The conservation officers across Mississippi are known for their innovation and local knowledge. How to combat the challenges of rural mortality involving recreational accidents? Combine communications technology, education and partnership to bring medical care to the patient more efficiently and coordinate the tiered medical response. UMMC developed the *Mississippi FAST* (First Responder, Assistance and Training) Program to provide medical education and MSWIN training to every state conservation officer, teaching them how to use the network to share medical information and provide medical care in extremely rural areas. This partnership has been tremendously successful, with numerous conservation officers activating medical care or assisting in directing ambulances or helicopters to injured or ill patients.

In 2016, the Mississippi Center for Emergency Services, the umbrella organization containing Mississippi MED-COM, the critical care transport teams, educational programs and public safety support division was awarded the *Rural Emergency Medical Communications Demonstration Project* (REMC DP) by The Department of Homeland Security (DHS) Office of Emergency Communications (OEC). This Project seeks to identify the specific challenges of limited interoperable communications in rural areas which hinders efficient medical care delivery. By combining elements of the FAST program above with LMR training, we have learned many valuable lessons directly applicable to the deployment of a LTE network for public safety.

The first lesson learned is the importance of technology training. After two quarters of education and data collection, over 500 public safety professionals have been trained. This was the first educational program geared toward the end-user of the MSWIN system. The early feedback from this program has been dramatic. Many responders have been users of the MSWIN system for years and didn't understand basic interoperability concepts or technical specifications of the system. As FirstNet develops a nationwide network, emphasis should be placed on the training of providers in the basic use, technical limitations and possibilities to fully integrate an LTE system into the public safety arena.

Another lesson learned from the five hundred plus public safety providers in this project is to anticipate an increased use of personal devices for work use. FirstNet has discussed the concept of Bring Your Own Device (BYOD) to the network, but reportedly believes that only a small number of responders use their own smart phone for business use. As we have learned in Mississippi, over twenty-five percent of our participants only use their personal smart phone for work. This current cohort of participants is heavily weighted toward paid law state, municipal and Federal officials. As the class is expanded to include many more volunteer emergency providers, that number is likely to increase significantly. While this statistic is hard to translate to a national population of public safety professionals, it is important that FirstNet focus on the BYOD model of integration, recognizing that this larger than expected population provides additional challenges for priority and preemption in the "official" capacity.

FirstNet and Emergency Medicine: The Possibilities

Beyond simply having access to broadband, innovative medical applications have the potential to address solutions to many of the challenges currently facing the U.S. healthcare system. In the next decade, the role of public safety in our Nation's healthcare system will expand in ways that are not yet fully understood. Public safety professionals have a unique opportunity to expand their impact in the delivery of medical care by focusing on innovation, technology and training. FirstNet has an opportunity to provide a reliable path for critical data sharing between healthcare institutions and field providers, not only impacting emergency care, but providing solutions for cost reduction and efficiency. The University of Mississippi Medical Center is serving as an incubator for innovation and training to look at ways that networks can be leveraged to improve healthcare outcomes and achieve efficiencies, and we hope that FirstNet will consider us a partner in achieving these mutual goals.

In closing, the experiences and lessons learned in Mississippi can provide vital lessons impacting the success of FirstNet. This is a huge opportunities to develop a system that will propel the innovation and operational changes that can save lives. Congress can assist in this effort by ensuring that FirstNet:

- Focuses on medical applications and development as an integral part of the public safety and healthcare environment

- Prioritizes rural coverage and addresses different priority and preemption challenges with rural data coverage and capacity
- Develops improved methods of engagement for volunteer and rural responders using personal devices (BYOD)
- Provides funding for Research and Development of medical applications as a key component to the development of public safety broadband

Thank you for your time and allowing me to provide some comments for your committee as they oversee this vital project.

Senator WICKER. Thank you very much, Dr. Darsey.

Next we will hear from the Government Accountability Office Physical Issues Director.

Mr. Goldstein, did I pronounce your name correctly?

Mr. GOLDSTEIN. Yes, Mr. Chairman, you have.

Senator WICKER. Well, you are recognized for five minutes with the thanks of this subcommittee.

Mr. GOLDSTEIN. Thank you, sir.

STATEMENT OF MARK L. GOLDSTEIN, DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

Mr. GOLDSTEIN. Good morning, Chairman Wicker, Ranking Member Schatz, and members of the Subcommittee. Thank you for the opportunity to discuss our June 2017 report on First Responder Network Authority, FirstNet, which we are publicly releasing today. We have previously reported and testified on FirstNet.

My remarks today are based on our new report, which, one, examines FirstNet's efforts—

Senator WICKER. Please read that report in its entirety, if you will.

[Laughter.]

Mr. GOLDSTEIN. I think you'll want to go to lunch, sir.

Senator WICKER. All right. I take it back.

Mr. GOLDSTEIN. It describes stakeholder views on network reliability, security, and interoperability challenges that FirstNet faces and its research and other efforts to address them and assesses FirstNet's plans to oversee the deployment of the network by its network contractor. In our report, we recommended that FirstNet fully explore tribal stakeholder concerns and assess its long-term staffing needs. FirstNet agreed with these recommendations.

FirstNet is charged with establishing a nationwide public safety broadband network that is reliable, secure, and interoperable. To perform this work, FirstNet is consulting with a variety of stakeholders. In March 2017, FirstNet awarded a 25-year contract to AT&T to build, operate, and maintain the network. FirstNet's oversight of AT&T's performance is very important, given the scope of the network and the duration of the contract.

Among GAO's findings in the report are the following: first, FirstNet has conducted key efforts to establish the network, namely, releasing the request for proposal for the network and awarding the network contract to AT&T. As the contractor, AT&T will be responsible for the overall design, development, production, operation, and evolution of the network.

Additionally, FirstNet consulted with state and local, Federal, and tribal stakeholders. State officials GAO contacted were gen-

erally satisfied with FirstNet's efforts to engage them. However, tribal stakeholders GAO contacted expressed some concern that FirstNet had not fully engaged in effective communication with tribes.

FirstNet engaged tribes through a variety of mechanisms, such as through state points of contact and a working group. But tribes noted that individuals with firsthand knowledge of tribes' experiences are not able to represent tribal views directly among FirstNet's key decisionmakers. Although FirstNet is required to consult with tribes through state points of contact, a key principle of effective tribal communication is to seek full understanding of tribal concerns and reach consensus where possible. By fully exploring and proposing actions to address tribal stakeholders' concerns, FirstNet could help improve its relations with tribes and better meet stakeholder needs.

Second, according to stakeholders GAO contacted, FirstNet faces various challenges to ensure the network's reliability, security, and interoperability. For example, stakeholders raised concerns related to providing coverage to rural areas, in buildings, or underground; ensuring the network's overall resiliency and cybersecurity; and managing frameworks for user identity, credentialing of users, access management, and prioritization of users on the network.

FirstNet has taken actions to address these challenges, such as by opening a test lab to test public safety devices and applications before deploying them on the network. The majority of stakeholders GAO contacted were satisfied with FirstNet's efforts, but many noted that much uncertainty remains about how the network will be implemented and about its overall viability.

Third, FirstNet established offices to oversee its network contractor; developed policies and procedures to guide contract administration, including management and oversight; and is receiving assistance from another Federal agency with contract administration experience, although FirstNet plans to assume full responsibility in the future.

For example, FirstNet established the Network Program Office to oversee the contractor's performance and facilitate quality assurance of contract deliverables, among other things. Although this office will perform essential contract administration functions, FirstNet has not yet conducted a long-term projection for staffing needs for this office as of recent months. As a result, FirstNet may lack reasonable assurance that it will have sufficient resources to handle increases in its responsibilities over time.

Planning for and assigning adequate resources, including people, and assessing resource needs is a key practice for planning and executing effective contract oversight. By performing a long-term staffing assessment for the Network Program Office, FirstNet would be in a better position to fully understand its staffing needs and respond to staffing changes and risks as it assumes full responsibility of contract administration in the future.

Mr. Chairman, this concludes my statement, and I'd be happy to address any questions the Subcommittee may have.

[The prepared statement of Mr. Goldstein follows:]

PREPARED STATEMENT OF MARK L. GOLDSTEIN, DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

FirstNet—Efforts to Establish the Public-Safety Broadband Network

Chairman Wicker, Ranking Member Schatz, and Members of the Subcommittee:

Thank you for the opportunity to discuss our June 2017 report on the First Responder Network Authority (FirstNet), which we are publicly releasing today.¹ We have previously reported and testified on FirstNet.² Whether conducting daily operations, overseeing planned events, or responding to emergencies, public safety officials—especially first responders such as police officers and firefighters—rely on communications systems to gather and share information and coordinate their efforts. However, first responders often have difficulty communicating with their counterparts in other agencies and jurisdictions because existing systems lack interoperability.

The Middle Class Tax Relief and Job Creation Act of 2012 (the 2012 Act) created FirstNet and required it to establish a nationwide, interoperable public-safety broadband network (hereafter, the network)—setting aside spectrum for the network to operate on and providing FirstNet with \$7 billion to fund the network's initial build-out.³ FirstNet must be self-funding beyond this initial \$7 billion. Key to the network's success, given its purpose, is its reliability, security, and interoperability. To inform its work, FirstNet must consult with state and local, federal, and tribal stakeholders.⁴ Since 2012, FirstNet has completed a number of tasks to plan for the build-out of the network, the most significant of which was the issuance of a request for proposal to solicit proposals from private companies to build, operate, and maintain the network. From these proposals, FirstNet selected AT&T as its network contractor and awarded it a multi-billion dollar, 25-year contract. Due to the size of the project and duration of the contract, the oversight mechanisms that FirstNet plans to use to monitor AT&T's progress and performance in building, operating, and maintaining the network are important.

My remarks today are based on our report, which (1) examines FirstNet's efforts to establish and finance the network; (2) describes stakeholder views on network reliability, security, and interoperability challenges FirstNet faces and its research and other efforts to address them; and (3) assesses FirstNet's plans to oversee the deployment of the network by its network contractor. In our report, we recommended that FirstNet fully explore tribal stakeholders' concerns and assess its long-term staffing needs. FirstNet agreed with these recommendations.

For our report, we reviewed the 2012 Act, FirstNet documentation, and documentation from other Federal entities involved in FirstNet's efforts, such as FirstNet's key research partner, the Public Safety Communications Research (PSCR) program.⁵ We compared FirstNet's efforts to respond to tribal stakeholders' concerns with the applicable key principle of effective tribal communication on Federal infrastructure decisions developed by several Federal agencies.⁶ We assessed the PSCR's and FirstNet's research activities against our previously identified criteria on key phases of sound research programs.⁷ We assessed FirstNet's contract oversight plans against key acquisition and contract oversight practices and actions established in Federal acquisition regulations, the Department of Commerce's (Commerce) acquisition manual, prior GAO reports, and other academic and industry sources.⁸ We also interviewed FirstNet and Commerce officials. To obtain stake-

¹ GAO, *Public-Safety Broadband Network: FirstNet Has Made Progress Establishing the Network, but Should Address Stakeholder Concerns and Workforce Planning*, GAO-17-569 (Washington, D.C.: June 20, 2017).

² GAO, *Public-Safety Broadband Network: FirstNet Should Strengthen Internal Controls and Evaluate Lessons Learned*, GAO-15-407 (Washington, D.C.: Apr. 28, 2015); GAO, *Public Safety Communications: Preliminary Information on FirstNet's Efforts to Establish a Nationwide Broadband Network*, GAO-15-380T (Washington, D.C.: Mar. 11, 2015).

³ Middle Class Tax Relief and Job Creation Act of 2012. Pub. L. No. 112-96, 126 Stat. 156 (2012). FirstNet is an independent authority within the Department of Commerce's (Commerce) National Telecommunications and Information Administration (NTIA).

⁴ Pub. L. No. 112-96, § 6206(c)(2)(A), 126 Stat. at 213.

⁵ The PSCR is a joint program between Commerce's National Institute of Standards and Technology and NTIA.

⁶ U.S. Departments of the Interior, the Army, and Justice, *Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions* (January 2017).

⁷ GAO, *Employment and Training Administration: More Actions Needed to Improve Transparency and Accountability of Its Research Programs*, GAO-11-285 (Washington, D.C.: Mar. 15, 2011).

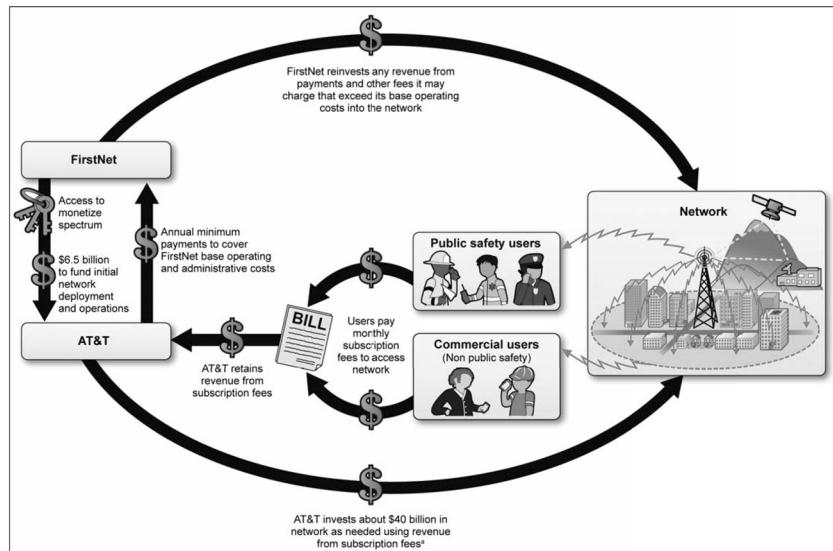
⁸ Commerce, *Selecting Contract Types*, Commerce Acquisition Manual, 1316.1, 6.3 (March 2016); GAO, *Joint Information Environment: DOD Needs to Strengthen Governance and Man-*

holder views on all our objectives—particularly the challenges FirstNet faces—we selected and contacted 33 stakeholders, including public safety, state and local government, and tribal associations and organizations; the Department of Homeland Security, the Federal Communications Commission, and the National Institute of Standards and Technology (NIST) and the National Telecommunications and Information Administration; and state government and public safety officials. We selected these stakeholders to obtain a variety of viewpoints from a cross section of interests and geographic locations; their views are not generalizable. Further details on our scope and methodology are included in our report. The work on which this statement is based was conducted in accordance with generally accepted government auditing standards.

FirstNet's Progress Establishing and Financing the Network and Consulting Stakeholders

In our report, we found that FirstNet has conducted key efforts to establish the network, namely releasing the request for proposal for the network in January 2016 and awarding the network contract to AT&T in March 2017. As the contractor, AT&T will be responsible for the overall design, development, production, operation, and evolution of the network, as well as the marketing, product management, sales, distribution, and customer care. Further, we found that FirstNet has established a framework to meet the financial requirements established in the 2012 Act, as depicted in figure 1. This framework focuses on leveraging FirstNet's spectrum through the use of payments and fees with the aim of ensuring that the network is financially sustainable over the life of the contract and that FirstNet sustains self-funding operations.

Figure 1: First Responder Network Authority's (FirstNet) Financial Framework



Source: GAO analysis of FirstNet information. GAO-17-702T.

^a AT&T's expected investment in the network includes its annual minimum payments to FirstNet.

agement, GAO-16-593 (Washington, D.C.: July 14, 2016); GAO, *National Science Foundation: Steps Taken to Improve Contracting Practices, but Opportunities Exist to Do More*, GAO-13-292 (Washington, D.C.: Mar. 28, 2013); GAO, *Information Technology Investment Management, A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: Mar. 1, 2004); Software Engineering Institute/Carnegie Mellon, *Capability Maturity Model® Integration (CMMI®) for Acquisition, Version 1.3*, CMU/SEI-2010-TR-032 (Pittsburgh, PA: November 2010); Project Management Institute, Inc., *The Standard for Program Management—Third Edition* (Newtown Square, PA: 2013); Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Fifth Edition* (Newtown Square, PA: 2013). PMBOK is a trademark of Project Management Institute, Inc.

By establishing a single, dedicated network for public safety use, FirstNet's network is expected to foster greater interoperability and meet public safety officials' reliability and other needs. However, the actual use (or "adoption") of the network by public safety users will be voluntary. Thus, even with the establishment of this framework, substantial unknowns remain regarding how many public safety users will adopt the network, the extent to which AT&T will be successful in monetizing the spectrum to retain revenue from commercial users, and the extent to which this revenue will be sufficient or appropriate in relation to the capital needed to build, operate, and maintain the network. Therefore, we noted in our report that, at this time, we could not assess the viability of this framework and whether FirstNet's structures for overseeing the contractor's use of the spectrum for commercial users will be appropriate.

We also found in our report that FirstNet has made progress consulting with state and local, federal, and tribal stakeholders through a variety of mechanisms. State officials we contacted were generally satisfied with FirstNet's efforts to engage them. However, tribal stakeholders we contacted expressed concern with FirstNet's efforts to consult with tribes per the 2012 Act's requirements. In particular, four of the five tribal organizations we contacted said that FirstNet has not fully engaged in effective communication or has relied on state points of contact too much as opposed to engaging directly with tribes; the other tribal organization was not aware of FirstNet or its mission at all. Further, tribes noted that individuals with first-hand knowledge of tribes' experiences are not able to represent tribal views directly among FirstNet's key decision makers. FirstNet has stated that, indeed, the 2012 Act requires that it consult with tribes through state points of contact. Nevertheless, several Federal agencies have identified seeking a full understanding of tribal concerns—and reaching consensus where possible—as a key principle of effective tribal communication, noting that agencies should adapt to changing circumstances, contemplate creative problem solving, identify options for addressing concerns, and exhaust alternatives to achieve mutually agreeable solutions.⁹

We concluded in our report that, by fully exploring and proposing actions to address tribal stakeholders' concerns, FirstNet could help improve its relations with tribes and better meet stakeholders' needs. As such, we recommended in our report that FirstNet fully explore tribal concerns and propose actions, as needed, to address those concerns. FirstNet agreed with this recommendation and said that it will develop and adopt an organization-wide tribal consultation policy.

FirstNet's Network Reliability, Security, and Interoperability Challenges and Efforts to Address Them

In our report, we found that—according to stakeholders we contacted—FirstNet faces various challenges to ensure the network's reliability, security, and interoperability. For example, stakeholders raised concerns related to:

- providing network coverage to rural areas, in buildings, or underground;
- ensuring the network's overall resiliency and cybersecurity; and
- managing frameworks for user identity, credentialing of users, access management, and prioritization of users on the network.

However, we also found that both FirstNet and the PSCR have begun research and other efforts to help ensure the reliability, security, and interoperability of the network and address the challenges raised by stakeholders. For example, in November 2016, FirstNet opened an Innovation and Test Lab at its technical headquarters in Boulder, Colorado. According to FirstNet documentation, FirstNet plans to use—and allow AT&T to use—the lab to test public safety devices and applications before deploying them on the network. Additionally, the PSCR has conducted research on behalf of FirstNet and, using \$300 million in funds provided to NIST by the 2012 Act, is also planning for and implementing other research activities to support FirstNet. For instance, in January 2016, PSCR launched its Public Safety Innovation Accelerator Program to support these research activities, and in December 2016, NIST issued a funding announcement to fund research in several areas.

At the time of our report, we found that PSCR's research process generally aligned with key phases of sound research programs identified by leading national organizations, including the American Evaluation Association and the National Academy of Sciences.¹⁰ For example, PSCR has established a structured process for developing research priorities that includes both internal and external stakeholders,

⁹ U.S. Departments of the Interior, the Army, and Justice, *Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions* (January 2017).

¹⁰ GAO-11-285.

and has identified criteria it uses to help it select the research areas to fund and procedures to help it guide and monitor its research. Similarly, FirstNet has determined its research priorities to date based on its network-planning needs and in consultation with internal and external stakeholders, and worked with the PSCR to define criteria to help it select research areas.

In our report, we found that the majority of stakeholders we contacted were satisfied with the planning efforts to ensure the reliability, security, and interoperability of the network. However, many stakeholders also said that there is much remaining uncertainty about how this will be implemented in practice. Additionally, one public safety official we contacted told us that FirstNet and its contractor will have to balance the costs associated with implementing features that make the network reliable and secure with the need to establish compelling and competitively priced service packages and fees that will encourage user adoption of the network.¹¹ Indeed, numerous stakeholders we contacted cited the cost of subscribing to the network as a key factor affecting user adoption, noting that the pricing must be comparable to what they pay for commercial service now, that budgets are constrained in the public safety community, or that local governments do not want costs to increase. Further, commercial carriers could choose to compete with FirstNet. FirstNet has stated that it expects AT&T to provide services at a competitive price and deliver affordable, high-quality services that will encourage public safety users to adopt the network. Ultimately—because the network must be self-funding and FirstNet has stated that revenue from network users will be critical to this funding—the success of the network depends on whether FirstNet and AT&T generate enough revenue to operate it over the long term and whether public safety users adopt it, no matter how reliable and secure it is.

FirstNet's Contract Oversight Mechanisms

FirstNet must manage and oversee the implementation of the network contract to build, operate, and maintain the network.¹² Federal internal-control standards also state that an entity's management retains responsibility for the performance of processes assigned to service organizations (such as contractors) and that management should hold these organizations accountable for their performance.¹³

In our report, we found that FirstNet has taken a number of steps to establish contract oversight mechanisms, but has not fully assessed the staffing needs of its oversight workforce. FirstNet's oversight mechanisms include developing policies and procedures to guide contract administration and establishing offices to oversee its network contractor. In particular, FirstNet established the Network Program Office to oversee the contractor's performance and facilitate quality assurance of contract deliverables, among other things. FirstNet is also receiving assistance from the Department of the Interior, which has experience with contract administration, although FirstNet plans to assume full responsibility for contract administration in the future. In our report, we found that FirstNet's efforts to develop contract oversight mechanisms aligned with several key actions that we identified as contributing to effective contract oversight. However, although FirstNet's Network Program Office will perform essential contract administration functions, FirstNet had not conducted long-term projections of staffing needs for the office as of April 2017. Planning for and assigning adequate resources, including people, and performing an assessment of the resources needed to oversee projects is one of the key actions we identified for planning and executing effective contract oversight.

We concluded in our report that FirstNet lacks reasonable assurance that it will have sufficient resources to handle increases in its responsibilities over time and that, by performing a long-term staffing assessment for the Network Program Office, FirstNet would be in a better position to fully understand its staffing needs and respond to staffing changes and risks as it assumes full responsibility of contract administration in the future. As such, we recommended in our report that FirstNet assess the long-term staffing needs in the Network Program Office prior to assuming full responsibility for administering the network contract. FirstNet agreed with this recommendation and said that it is taking steps to implement it.

Chairman Wicker, Ranking Member Schatz, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

¹¹ For additional discussion of factors that may affect user adoption, see GAO-15-407.

¹² Pub. L. No. 112-96, § 6206 (b)(1)(D) 126 Stat. at 212.

¹³ GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

Senator WICKER. Thank you, and we will be involved in some Q and A in a few moments.

Mr. Sambar, we will go to you next and hear from AT&T. Glad to have you with us.

**STATEMENT OF CHRIS SAMBAR, AT&T SENIOR VICE
PRESIDENT, FIRSTNET, AT&T INC.**

Mr. SAMBAR. Thank you, Mr. Chairman. Chairman Wicker, Ranking Member Schatz, and members of the Committee, I'm Chris Sambar, Senior Vice President of FirstNet. I am currently responsible for AT&T's fulfillment of the FirstNet contract, including designing and executing on the business model that will support the nationwide First Responder Network.

AT&T is honored to have been chosen by FirstNet to build and manage the network. I view this mission as a special opportunity for AT&T and its dedicated employees to demonstrate their continued commitment to public safety and our communities. I am especially grateful for the opportunity to affirm to this Committee that AT&T is committed to delivering a dedicated interoperable network that will give first responders the technology they need to effectively communicate and collaborate across agencies and jurisdictions.

The AT&T team that I lead is dedicated exclusively to FirstNet. I expect this group to grow to several hundred employees by this year's end as we hire people across the country with a broad range of skill sets to help us ramp up our network buildout. Overall, AT&T expects to spend \$40 billion over the lifetime of this contract and to build and operate a unique nationwide interoperable, IP-based, high-speed mobile network encrypted at its core that will provide first responders priority, primary users with preemption, and all other users during times of emergency and network congestion.

The First Responder Network will be connected to and leverage off AT&T's world class telecommunications platform, valued at nearly \$180 billion, including a wireless network that reaches 99.6 percent of the U.S. population. In addition, AT&T will support first responders 24/7/365 with a dedicated security operations center and help desk. We will provide first responders with a highly secure application ecosystem, as well as a highly competitive, flexible pricing on equipment and services that they select for their unique needs.

One of the most important resources that AT&T brings to bear on the new First Responder Network is our best-in-class national disaster recovery team. We have spent more than 130,000 working hours on field exercises and disaster recovery deployments over the last two decades. This team combines network infrastructure, support trailers, recovery engineering software applications, and boots on the ground filled by full time and volunteer AT&T disaster response team members. In order to support the First Responder Network, AT&T will increase its disaster recovery fleet by adding 72 new, custom-designed vehicles just for the FirstNet mission.

FirstNet is not just about today's technology advances. It is about tomorrow's technological promises. FirstNet and AT&T will continue to innovate and evolve the First Responder Network to ben-

efit public safety. Possibilities include near real-time information on traffic conditions, which can help determine the best route to an emergency for a first responder; wearable sensors and cameras for police and firefighters to help give them better situational awareness; and camera-equipped drones and robots that will be able to deliver real-time imagery.

Our FirstNet efforts are expected to create 10,000 U.S. jobs over the next 2 years, as well as significant public-private infrastructure investment. We believe the benefits of the new nationwide interoperable First Responder Network are such that if we build, the states will come. I am happy to report that as of today, five states have opted in—Virginia, Wyoming, Arkansas, Kentucky, and, most recently, Iowa.

As I describe in more detail in my written statement, the significant benefits of these states and those others that will opt-in in the future will avoid the long-term risks associated with funding, building, and managing and maintaining a standalone network that interoperates with the FirstNet network. States and territories that opt-in provide their public safety agencies with access to the competitive rates enabled by AT&T, and those rates enabled us to be selected by the First Responder Authority as the awardee.

Mr. Chairman, Ranking Member Schatz, honorable members of this Committee, thank you again for having me here, and I look forward to addressing any questions that you have.

[The prepared statement of Mr. Sambar follows:]

PREPARED STATEMENT OF CHRIS SAMBAR, AT&T SENIOR VICE PRESIDENT, FIRSTNET, AT&T INC.

Thank you, Chairman Wicker, Ranking Member Schatz, and Members of the Committee.

I am Chris Sambar, AT&T Senior Vice President—FirstNet. AT&T is a company with a 140-year heritage of innovation that includes 8 Nobel Prizes and more than 15,000 patents and pending patents worldwide. We employ more than 200,000 people in the United States, and over the past five years, we've invested more in the U.S. than any other public company—nearly \$135 billion.

I appreciate the opportunity to update the Committee on the status of the FirstNet and AT&T plan to provide a nationwide broadband network for public safety. I head a group at AT&T dedicated to building and operating that network for decades to come. And I can assure you that AT&T is fully committed to delivering a dedicated, interoperable network that will give first responders the technology they need to communicate and collaborate across agencies and jurisdictions during emergencies. This opportunity aligns with our centuries-old history of serving the U.S. Federal Government and the public safety community.

Supporting public safety is part of our company's DNA. As a retired Naval officer and Navy SEAL, public service has been a calling throughout my adult life. I view FirstNet as a special opportunity to do it again for a company that shares a commitment to public service and public safety.

FirstNet Background and Purpose

First responders frequently lack the ability to communicate with each other and coordinate incident response activities across agencies and jurisdictions. In fact, they rely on over 10,000 radio networks for voice communications to do their job. These networks often do not interoperate, which can severely limit their ability to communicate with each other when responding to a situation, especially those involving responders from multiple areas. In addition, first responders use the same commercial wireless networks that we all do. Those networks can quickly become congested during a significant emergency. We have unfortunately witnessed how these issues hamper first responders, such as in responding to the 9/11 attacks and in other emergencies since (e.g., Hurricane Katrina).

In response, Congress recognized that we can and should do better to support our first responders and their critical mission—to save lives. And in 2012 Congress

passed legislation that created the First Responder Network Authority (FirstNet) as an independent authority within NTIA to provide emergency responders with the first, nationwide, high-speed, broadband network dedicated to public safety. Congress established FirstNet to deliver a robust, highly secure, and efficient communications network that will help responses to emergencies as they unfold. And that is exactly what FirstNet and AT&T intend to deliver.

AT&T's Commitment to FirstNet

As I said, AT&T is honored to have been chosen to build and manage the FirstNet network and we are committed to bringing to bear all the necessary resources to ensure its success, just as Congress envisioned. What will that mean?

First, as part of its commitment, AT&T will spend about \$40 billion over the life of the FirstNet contract to build, operate and maintain the network. AT&T will connect FirstNet to its world-class telecommunications network valued at nearly \$180 billion, with a wireless network reaching 99.6 percent of the U.S. population.

I am also proud that AT&T will support FirstNet with its world-class National Disaster Recovery (NDR) Team. This team, which we established over 25 years ago, has a single mission: to recover AT&T voice and data service in areas affected by a disaster. The NDR solution combines network infrastructure and support trailers, recovery engineering software applications and a response team with both full-time and volunteer members from AT&T. We will increase our fleet with 72 new deployables to support FirstNet. Team members have spent more than 130,000 working hours on field exercises and deployments over the last two decades.

Finally, as I noted above, we have put together an internal group, which I lead, dedicated solely to FirstNet. I expect this group to grow to several hundred employees by year's end. As we ramp up our buildout of the FirstNet network, we are hiring people across the country who have a passion for public safety and for first responders.

With these resources, AT&T will create a nationwide IP-based high-speed mobile network that provides First Responders priority. "Priority" means just that—in times of emergencies and network congestion, our network will give first responder communications precedence and, for "primary users," preempt all other communications. In sum, the FirstNet network will meet the needs of public safety like never before, providing:

- A unique, differentiated, and highly secure network, encrypted at its core.
- Dedicated IP core with capabilities of priority and, for primary users, pre-emption.
- Interoperability across public safety agencies and jurisdictions.
- Customized customer service with dedicated 24/7 AT&T security and helpdesk operations support centers.
- A highly secure app ecosystem.
- Network Disaster Recovery resources.
- Highly competitive, flexible pricing.

Together, these capabilities will better connect first responders to the critical information they need in an emergency, keeping them out of harm's way.

In addition, FirstNet and AT&T will innovate and evolve the network to benefit public safety. In many cases, and often due to budgetary constraints, the public safety community has not kept up with advances in communications technology. But these advances can make a real difference in crisis situations. For example, providing emergency personnel near real-time information on traffic conditions to help determine the best route to an emergency can save critical minutes for first responders to get to an emergency. Other enhanced capabilities, such as wearable sensors and cameras for police and firefighters, can deliver near real-time images of events, such as fires, floods or crimes. Imagine camera equipped drones and robots delivering these images. AT&T is at the forefront of IoT advances and a leader in Smart Cities technology that can monitor a city's critical infrastructure, traffic and even listen for gun shots. Solutions like these could one day enhance the capabilities AT&T can bring to first responders.

FirstNet will also bring with it increased wireless network coverage in various rural areas across the country, allowing people living in these communities to have greater access to 9-1-1 and public safety communications capabilities. In addition, AT&T will use surplus capacity on the FirstNet network to offload traffic from commercial users and improve service and coverage for all our wireless users in these areas.

FirstNet will also create jobs and drive investments across states and territories. This significant public-private infrastructure investment, and the buildout sup-

porting it, is expected to create 10,000 U.S. jobs over the next two years. These new jobs will include positions in technology development, network deployment and operations.

AT&T could not be more excited about delivering on the promises of the FirstNet network, to the benefit of first responders and the communities they serve.

Benefits to States Opting In

Since FirstNet announced (on March 30) that it had selected AT&T, we have jointly committed to providing states and territories all the information they need to make an informed decision to opt in the FirstNet network. Our intent all along is to ensure that states and territories do not feel alone in the process. FirstNet and AT&T are therefore committed to continual engagement and consultation with the states to help explain what FirstNet means to their stakeholders and to help ensure that it delivers what the public safety community in each state needs.

Consistent with this commitment, in early June, we conducted a two-day meeting with state officials in Dallas to discuss the network AT&T is building, the services we will deliver, as well as the delivery of state FirstNet plans. Over 200 people, including representatives from 56 states and territories attended the meeting. In addition, before and after this meeting, FirstNet and AT&T have had countless meetings with state decision makers and public safety stakeholders to answer any questions they might have. FirstNet is also conducting an education and outreach program to engage tribal leaders on the network and their public safety needs.

On June 19, FirstNet and AT&T began providing states and territories individual state plans to enable the rapid deployment of the FirstNet network. The delivery of these state plans came 3 months ahead of schedule. States and territories can now spend up to 45 days to review the plans. We released the plans ahead of schedule not only to give states the ability to opt in early (and receive the benefits of FirstNet as soon as possible), but also to provide them extra time to exchange feedback with FirstNet before an official 90-day clock starts, likely in mid-September, for each state or territory to make an “opt-in/opt-out” decision on its state plan. I am happy to report that on July 10 and July 11, Virginia and Wyoming, respectively, became the first states to publicly announce their intent to opt in, and Arkansas and Kentucky have since joined them.

There are significant and immediate benefits for states to opt in the FirstNet network.

- Opting in alleviates long-term risks associated with funding, building and maintaining a network for 25 years that interoperates with the FirstNet network.
- Once a state or territory opts in, public safety entities in that state or territory will be able to purchase services with key network features, such as quality of service and priority access to voice and data across AT&T's LTE network, at competitive rates.
- Preemption over the AT&T LTE network for primary users is expected by year's end. This means fire, police and EMS with FirstNet service will have dedicated access to the network when they need it.
- As states and territories join, investment in infrastructure and job creation will follow.
- Rest assured, once a state or territory joins in, FirstNet and AT&T will continue ongoing consultations with the state or territory to ensure that the solutions we offer best serve the public safety community.

AT&T's Commitment to Diversity

Finally, I would also like to take this opportunity to stress AT&T's commitment to meeting or exceeding all requirements to subcontract work to veterans, minority-owned, and woman-owned businesses. AT&T has a long history of supporting diverse businesses and communities. AT&T is among the leading companies in identifying and doing business with diverse suppliers. Last year, we spent \$14.2 billion with diverse suppliers, representing nearly 19 percent of our total supplier expenditures. It is not surprising that AT&T has been ranked No. 1 for three consecutive years in Diversity Inc.'s "Supplier Diversity Survey." We employ more than 11,000 veterans. In 2013, AT&T announced it would hire 10,000 veterans within the next 5 years, which was met at the end of 2015, well ahead of schedule. AT&T is doubling that commitment and pledged to hire an additional 10,000 veterans by 2020. In 2016, AT&T's U.S. workforce was 32 percent women and 43 percent people of color. In 2016, nearly 31.5 percent of our new hires were women, and 56 percent people of color. We recognize that this diversity benefits our company, our customers, and our employees.

I look forward to continuing this important dialogue as FirstNet moves forward. I welcome your questions.

Thank you again Mr. Chairman for this opportunity.

Senator WICKER. Thank you very much, Mr. Sambar.

Now, in terms of the CEO of FirstNet, Mr. Poth, did I pronounce your name correctly?

Mr. POTH. You nailed it, Senator.

Senator WICKER. OK. Good.

Mr. POTH. You had a 50/50 chance.

Senator WICKER. Well, it's a one syllable thing, so not much of an accomplishment there.

[Laughter.]

Senator WICKER. At any rate, you are recognized, and we're delighted to have you.

**STATEMENT OF MICHAEL POTHE, CHIEF EXECUTIVE OFFICER,
FIRST RESPONDER NETWORK AUTHORITY (FIRSTNET)**

Mr. POTH. Great. Thank you very much and good morning, Chairman Wicker, Ranking Member Schatz, and members of the Subcommittee. Thank you for inviting me to testify today.

This is my second time appearing before this Subcommittee representing FirstNet and the men and women of public safety. I last testified before the Subcommittee a little more than a year ago and spoke to you about what and might should be the future of a nationwide public safety broadband network.

Today, the message that I bring is one of tangible progress, including the award of the FirstNet nationwide contract, the delivery of the state plans, and the news that five states have already opted in to their plans. We have a clear path forward to the successful deployment of the entire FirstNet network.

First, I'd like to just take a moment and thank public safety for everything that they do. This is who we work for every day. Their mission-critical serving the citizens of the United States is why FirstNet is so important. We have never lost focus of the goal of delivering the best possible network for the men and women who protect our communities, our neighborhoods, our families, and put themselves in harm's way without hesitation every single day.

FirstNet has accomplished a great deal over the past few weeks, let alone the past 12 months since I last testified before this esteemed panel. In the last year, for example, we have continued our outreach and consultation efforts with our state partners, holding more than 1,200 outreach events and meetings across all 56 states and territories; completed the RFP process, including evaluating multiple competitive proposals, having the Court of Federal Claims verify and agree that our RFP process was open, transparent, and competitive; and we ultimately selected AT&T as our nationwide awardee.

We've created and delivered state plans on June 19 to 50 states, two territories, and the District of Columbia, three months ahead of schedule. And, as mentioned, the five Governors from five great states have already opted in. None of this could be possible, though, without the public-private framework that Congress established for the FirstNet network. By leveraging private sector resources, infrastructure, cost savings, public-private partner

synergies to deploy, operate, and maintain the system, FirstNet can now be deployed quickly, efficiently, and cost-effectively.

After a vigorous, competitive, yet fair and open transparent procurement process, AT&T was selected back in March to deploy the network on behalf of public safety. We are proud to have AT&T on board as our network partner in this mission critical project, and we hit the ground running with them on day one to deliver for public safety. With the FirstNet solution, our Nation's first responders will receive specialized services far and above what they have today over a first-class broadband network dedicated to local communication needs.

Using existing infrastructure, FirstNet will be deployed rapidly, much faster than anyone thought possible, and this was driven by public safety's input. They've waited too long and fought too hard for this network. We must also realize that public safety communication needs are technical and more critical day by day as we move further into our highly connected Internet of Things world. That is why FirstNet and AT&T will continue to evolve the network hand in hand with public safety to ensure it meets their needs today and tomorrow for the next 25 years.

While there has been much success, we still have work to do. As the GAO testimony references, there are areas where FirstNet has already improved and still areas where we still need to strive for more, and FirstNet is committed to continuing to strive for the highest level of excellence in every area. Status quo is not in our vocabulary.

Tribal consultation is a key part of our planning. As part of FirstNet's commitment to engaging with the 567 federally recognized tribes, FirstNet adopted a tribal consultation policy to ensure that tribal emergency responders are able to access the benefits of this nationwide system once we have opt-ins from the Governors. I actually also want to thank the Navajo nation, who is in attendance today, for their support.

Ultimately, the most important action that FirstNet must take is to continue to work every day with first responders and always listen to public safety. You've heard me say that this is their network. We at FirstNet have been entrusted by public safety to deliver what they need in order to keep us safe. It is this belief that drives us at FirstNet, and we will ensure that we accomplish what public safety deserves, excellence in service, reliability, and performance.

Thank you again for your support, and I look forward to answering your questions.

[The prepared statement of Mr. Poth follows:]

**PREPARED STATEMENT OF MICHAEL POTHE, CHIEF EXECUTIVE OFFICER,
FIRST RESPONDER NETWORK AUTHORITY (FIRSTNET)**

Introduction

Chairman Wicker, Ranking Member Schatz, and all Members of the Subcommittee, I would like to thank you for the opportunity to appear here today to provide an update on the progress we are making at FirstNet toward the deployment of an interoperable nationwide public safety broadband network (NPSBN or Network). I last testified before the subcommittee almost a year ago and spoke about possibilities. Today, the message that I bring to you is one of tangible progress and development, including the award of the nationwide contract, the delivery of initial State Plans, and a defined path forward to the successful deployment of the FirstNet network.

Progress towards a Network

FirstNet intends to provide a cutting-edge wireless broadband communications system, with priority and pre-emption, to millions of first responders at the local, state, tribal, and Federal levels across all states, territories, and the District of Columbia, consistent with the vision laid out in the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112–96) (Act). By enabling the Network's deployment, FirstNet will provide a dedicated, ubiquitous solution that helps solve public safety's decades-long interoperability and communications challenges, which includes advanced communications services, devices, and applications to help first responders and other public safety personnel make communities safer.

FirstNet's goal of deploying the Network, and thereby meeting the needs of first responders, is a matter of critical importance for public safety, and today we are closer than ever before to accomplishing this goal. Since its inception, FirstNet has taken the necessary steps to build an organization, execute a vigorous consultation and outreach strategy, develop and release a comprehensive request for proposals (RFP), select an experienced and proven wireless industry leader for a first-of-its-kind public-private partnership, and lay the groundwork for a successful deployment of the NPSBN. Much has been accomplished.

However, as it is with any unprecedented undertaking, every step forward presents new challenges and requires identification of innovative solutions. The past three years have involved hundreds of thousands of working hours to solve the various challenges FirstNet has faced. I am proud to say that today we have an organization of people who have approached these challenges head on and advanced the mission with a clear and unwavering dedication to public safety. The organization is dedicated to fulfilling FirstNet's responsibilities to the public safety community; creating a culture of hard work, openness, and transparency; developing a successful public-private partnership; and continuing a robust consultation and outreach program to educate, inform, and obtain input from FirstNet's partners in the states and public safety stakeholders.

The Selection of AT&T

At a signing ceremony on March 30, 2017, Secretary of Commerce Wilbur Ross announced FirstNet's award of the nationwide contract to AT&T. The attendees included AT&T CEO Randall Stephenson, Federal Communications Commission (FCC) Chairman Ajit Pai, Members of Congress and staff, FirstNet Board members, FirstNet leadership, and, most importantly, public safety representatives.

Prior to the ceremony, the FirstNet Board voted unanimously to authorize the award. With the Board's authorization, FirstNet and the Department of the Interior, FirstNet's procurement partner, made the 25-year award to AT&T based on the determination that AT&T's proposal presented the overall best value solution for FirstNet and public safety.

We were able to move forward with an award to AT&T after a March 17, 2017, decision by the U.S. Court of Federal Claims to deny a protest filed by one of the unsuccessful bidders.

The Benefits of a Public-Private Partnership

Before listing the details of the solution FirstNet and AT&T are delivering to public safety, it is important to understand the benefits of the public-private partnership. By leveraging private sector resources, infrastructure, and cost-saving synergies to deploy, operate, and maintain the Network, the NPSBN can be deployed quickly, efficiently, and far more cost-effectively than any other model.

Congress foresaw the benefits such a partnership could offer and gave FirstNet the tools necessary to engage the private sector, thereby allowing the private sector to do what it does best—leverage the market to determine the best deal at the best price, while ensuring that a dedicated, interoperable Network is built to public safety's requirements. The fact remains that neither party—FirstNet nor AT&T—on its own could build a network like the FirstNet Network. It would be too expensive and too burdensome. A public-private partnership ultimately will provide a Network that benefits public safety in a manner that would have been impossible to achieve if left solely to the private sector or Federal Government.

FirstNet is confident that the Network will also provide many specialized features. In addition to robust rural coverage, public safety will have access to FirstNet-dedicated deployable equipment for use during disasters and pre-planned events, as well as in-building solutions—because FirstNet recognizes that first responders' communications do not stop at the curb.

The solution also includes a customer service center dedicated specifically to public safety—available 24/7, 365 days a year; a dedicated FirstNet core with built-in redundancy to provide end-to-end cybersecurity; and an entire eco-system of devices,

apps, and tools for public safety, including a FirstNet app store. Each of these features will be a first for public safety as they are not currently available on any network today.

Details of the Partnership with AT&T

The FirstNet and AT&T public-private partnership is a significant investment in the communications infrastructure that public safety desperately needs for day-to-day operations, emergency and disaster response and recovery, and securing of large events. Some of the key broad terms of this 25-year agreement are:

- FirstNet will provide 20 MHz of spectrum and success-based payments of up to \$6.5 billion over the next five years to support the Network buildout; and in return AT&T will deploy and operate a nationwide high-speed mobile broadband network and support the digital communications ecosystem for public safety over 25 years.
- AT&T will spend a minimum of \$40 billion over the life of the contract to build, operate, deploy, and maintain the Network, and together with FirstNet will help to ensure the Network evolves with the needs of public safety and advances in technology. Additionally, AT&T will connect FirstNet users to the company's current telecommunications network assets, valued at more than \$180 billion.
- AT&T will utilize FirstNet's spectrum when not in use by public safety for other, commercial purposes. AT&T will prioritize public safety users over any other commercial users on the Network and over all of AT&T's commercial LTE bands, including implementing a pre-emption feature for primary FirstNet users.
- FirstNet, as part of the Department of Commerce, and the Department of the Interior, as our contracting authority, will manage and oversee the contract to ensure AT&T delivers innovation, technology, and customer care to public safety through various mechanisms, including subscriber adoption targets, rural coverage obligations, milestone buildouts, disincentive fees, and other mechanisms.

The benefits for public safety and cost-savings to taxpayers are clear. If the Federal Government alone were to build, maintain, and operate this mission critical Network, the Government Accountability Office (GAO) has estimated it could cost up to \$47 billion over ten years.¹

With this partnership approach, FirstNet and AT&T do not need any additional Federal funding to build and operate the Network—it is a fully-funded, self-sustaining Network. In return, America's public safety responders will receive specialized services far above and beyond what they have today over a first-class broadband network dedicated to their communications needs. In addition, this innovative public-private partnership will create thousands of new jobs and ensure public safety has a voice in the growth and evolution of the Network.

How the Network Will Help Public Safety

The ability to communicate seamlessly across jurisdictions is critical for law enforcement, fire, and emergency medical services (EMS) when securing large events or responding to emergencies and disasters. In those instances, networks can become overloaded and inaccessible, limiting responders' use of vital communication technologies, such as smartphones and applications dedicated to public safety services.

By providing unfettered, uninterrupted access to wireless spectrum, the NPSBN will help improve response times and situational awareness for public safety from coast-to-coast, every state, territory, and across tribal and Federal land, in both rural and urban areas, leading to safer and more secure communities, and first responder safety.

The market certainty the Network will provide through a long-term commitment, scale, and capacity will enable private sector investment and innovation for advanced life-saving technologies, tools, and services, such as:

- Applications that allow first responders to reliably share videos, text messages, photos, and other information during incidents in near real-time;
- Advanced capabilities, like camera-equipped connected drones and robots, to deliver images of wildfires, floods, or other events;

¹ U.S. Government Accountability Office, GAO-15-407, Public-Safety Broadband Network: FirstNet Should Strengthen Internal Controls and Evaluate Lessons Learned 31 (2015), <https://www.gao.gov/products/GAO-15-407>.

- Improved location services to help with mapping capabilities during rescue and recovery operations; and
- Wearables that could relay biometric data of a patient to the hospital or alert when a fire fighter is in distress.

Network technology will also be tested and validated through the FirstNet Innovation and Test Lab, located in Boulder, CO, to ensure first responders have the public safety grade, proven tools they need and can trust during disasters and emergencies.

State Plans

On June 19, FirstNet and AT&T delivered initial State Plans to the states and territories for comment three months ahead of schedule.² This marked a major milestone in the deployment of FirstNet.

Since 2013, FirstNet has worked hand-in-hand with the states, territories, localities, Federal authorities, tribes, and the public safety community to make sure the Network is specifically built for their needs. FirstNet's consultation efforts included more than 140,000 engagements with public safety stakeholders nationwide, and the collection of data from states and territories that accounted for more than 12,000 public safety agencies representing more than 2 million public safety personnel.

Developed with this input, the customized State Plans outline the coverage, features, and mission-critical capabilities FirstNet and AT&T will bring to first responders and other public safety personnel. States have the opportunity to identify priorities and concerns related to Network coverage (including in rural areas) and services. FirstNet has also encouraged states to solicit feedback from the tribes in each state to ensure their priorities and concerns were incorporated in the State Plans. Based on this feedback, FirstNet and AT&T will determine how to evolve the solution, where possible, to address these requirements.

In conjunction with the release of the initial State Plans, the partnership also launched a public website: *FirstNet.com*. This website provides information about the FirstNet solution, the unique value of the FirstNet Network to public safety, and how public safety entities may subscribe to FirstNet once a state or territory opts in. The site will host information on quality of service, priority and preemption; local control features; the applications store; devices and accessories for FirstNet; and coverage and rate plans.

Future Timelines

The delivery of the initial State Plans kicked off the next phase of the FirstNet Strategic Roadmap toward network deployment. This key development gives states and territories the opportunity to review the State Plan for up to 45 days. During this time, they have the opportunity to ask questions of and provide comments back to FirstNet and AT&T. The state single point of contact (SPOC) is responsible for consolidating the feedback from their respective state and providing it to FirstNet. This process allows the SPOC to continue to be the primary point through which information about Network planning flows in discussions with the state or territory.

FirstNet and AT&T plan to respond within 45 days to any questions or comments received by each state and territory during the review process. Following the conclusion of this period, likely in mid/late September 2017 for those states and territories that choose to make use of the full State Plan review period to ask questions and provide comments, FirstNet will provide notice to the governor, per the Act. The notice to the governor will include notification that the RFP process is complete, the final State Plan, and the funding level for the state as determined by the National Telecommunications and Information Administration (NTIA) for potential state Radio Access Network (RAN) construction grants in the event the state opts out. This will initiate the 90-day clock that the Act provides for each state or territory governor to make an "opt in/opt out" decision on its State Plan. We expect the deadline to complete this decision in mid/late December 2017.

Since the release of initial State Plans, FirstNet and AT&T have been actively engaging with the states and territories to support their review of the State Plan and answer questions. As of today, we have conducted in-person engagements with 48 states and territories.

²As of July 20, 2017, three territories (Guam, Northern Mariana Islands, and American Samoa) have not yet received their initial plans. Delivery of State Plans for these territories will occur as soon as we have more comprehensively documented a solution that will bring superior value and capabilities to the public safety entities in these territories.

The Governors' Decision

The decision that a governor faces is one that will have profound consequences on the ability of public safety in his or her state or territory to gain access to mission critical broadband.

Opt in:

A governor's decision to opt in will enable FirstNet and AT&T to begin the process of delivering services to that state or territory's public safety community. It is a decision that will also drive infrastructure investments and job creation.

If a state opts in or takes no action on the State Plan within 90 days of receiving notice, FirstNet will issue a task order to begin deployment of the RAN portion of the FirstNet Network in the state at no cost to the state. States do not have to wait the full 90 days to make an opt in decision and several states have already provided notice of their intention to opt in. The opt in path is a low-risk option that will support faster delivery of services to the state's public safety community and help create an interoperable, highly secure, sustainable Network for public safety. The earlier a state opts in, the sooner public safety responders in that state will have access through AT&T's enhanced communication capabilities to help better serve and protect their communities.

On July 11, 2017, the Commonwealth of Virginia became the first state to submit a letter of intent to opt in to the FirstNet Network. Shortly thereafter Wyoming became the first state in the West to send a letter of intent to opt in. We look forward to working with Virginia, Wyoming and all states in moving forward with deploying the Network.

Opt out:

If the state elects not to participate in the FirstNet RAN deployment, it must provide notice to FirstNet within 90 days of receiving notice of its State Plan from FirstNet, and within 180 days of such notice to FirstNet, the state must develop and complete an RFP for the state RAN.³ Subsequently, it must submit an alternative plan to the FCC for the construction, maintenance, operation, and improvement of the RAN in the state within 60 days from RFP completion. The state RAN must be interoperable with the Network and comply with FirstNet's requirements and standards for the Network. Before the state's RAN deployment can begin, the Federal Communications Commission (FCC) must approve the alternative plan, and, if approved, the state must then apply to the NTIA for the right to enter into a spectrum capacity lease with FirstNet, and ultimately agree to the terms of such a lease with FirstNet, and may also apply to the NTIA for a state RAN construction grant.

Opt out states will assume all technical, operational, and financial risks and responsibilities related to building their own RAN for the next 25 years. Given the statutorily mandated processes, it is possible a state pursuing opt out will be at least two years behind states that opt in.

It is important to note that if a state or territory wishes to opt out, FirstNet will do everything we can to make that opt out process a success. Public safety cannot afford to have areas of no service throughout the country. We are encouraging states and territories to look at all the information in the State Plans to ensure that they fully understand the risks and requirements associated with opting out. We are confident that each State Plan will deliver the coverage, value, and experience states and territories expect for their first responders, bringing us closer to making the cutting-edge Network and technologies that public safety has been asking for a reality.

Conclusion

For more than three years, FirstNet has worked hand-in-hand with our partners in the states and territories to develop a Network that meets the needs and objectives of our Nation's first responders. After thousands of meetings and countless discussions with public safety, we feel confident about the overall Network solution and individual plans that we have proposed for each state and territory because they have been driven by and reflect public safety's input throughout the Nation.

FirstNet has made a lot of progress over the past year. We successfully completed a comprehensive nationwide RFP process, which included prevailing in a protest action; awarded a 25-year contract to AT&T—an innovative private sector technology

³These plans release on June 19 provide the states and territories the opportunity to exchange feedback with FirstNet before an official 90-day clock starts for each state or territory governor to make an "opt-in/opt-out" decision on its State Plan. This clock will only begin in September.

partner who has 140 years of experience serving the public safety community; and worked effectively and efficiently with AT&T to deliver initial State Plans to governors three months ahead of schedule. We are now focused on preparing for the deployment of the Network in opt in states and territories and the next crucial phase of the project—public safety user adoption.

While there has been much success, we still have work to do. As the GAO highlighted, there are areas for improvement, and FirstNet is dedicated to continuing to strive for excellence in every area.⁴

Through cooperation with the Department of Commerce, NTIA, the FCC, and other Federal partners, FirstNet has been able to achieve a great deal over the past year. Moving forward, we plan to continue to leverage these partnerships.

Ultimately, the most important action that FirstNet must take is to continue to listen to public safety. You have heard me say time and again that this is their Network. We at FirstNet have been entrusted by public safety to deliver what they need in order to keep us safe. It is this belief that drives us at FirstNet and will ensure that we accomplish what public safety deserves—excellence in service, reliability, and performance.

Senator WICKER. Well, thank you very much.

Let me just begin by asking Mr. Sambar and Mr. Poth—Mr. Goldstein says the GAO report was released today. Did either of you get a sneak preview?

Mr. POTHE. We certainly did at FirstNet. GAO has been a great partner. We worked with them hand in hand as they were developing the report and their recommendations.

Senator WICKER. OK. Well, Mr. Poth, having seen a draft copy, then, you, I think, responded to some of the items that Mr. Goldstein mentioned, particularly the tribal concerns. Is there any other response you'd like to put on the record in the hearing in reply to the report of the GAO?

Mr. POTHE. No, absolutely, as Mr. Goldstein identified, two areas that they thought we needed to focus on are staffing, long-term staffing for our program office. We addressed that quickly, and in full recommendation, we've already been doing a great deal of work to that.

As it relates to the tribal, we've done a great deal of work over the last year and continue to try to improve our position with our tribal consultation. We adopted tribal policies. We actually, with our public safety advisory committee, have established a tribal working group, which is 15 members from 15 different tribes, and we continue, as we do state outreach, to do work both with the states and all the tribes within those states to continue to improve the communication so that they have an appreciation of what FirstNet can bring to bear for them.

Senator WICKER. Mr. Sambar, I'll bet you got a sneak peak, too.

Mr. SAMBAR. I did, sir.

Senator WICKER. Is there anything you'd like to add to supplement Mr. Poth's—

Mr. SAMBAR. Just to piggy-back on the tribal question and the issue that was noted in the GAO report. As we understand it, there are just over 550 federally-recognized tribal entities, and the majority of them are in California and Alaska, right around 60 percent. And since March, we have done over 1,000 visits between AT&T and FirstNet throughout the country. We have, on just over 400 oc-

⁴ U.S. Government Accountability Office, Public Safety Broadband Network: FirstNet Has Made Progress Establishing the Network, but Should Address Stakeholder Concerns and Workforce Planning (2017).

casions, been in situations or visits where we could invite tribal entities. So any time we have the opportunity to invite them, to give them information, to make them feel welcome, and to gather their input, most importantly, we have done that.

So we have tracked every visit that we've done, every time we've extended an invitation, and every time they have attended. Our goal is to reach as many of them as possible, and these visits and meetings will continue throughout the rest of the year. So our goal is as much engagement as possible to satisfy their desires and concerns.

Senator WICKER. Thank you.

Dr. Darsey, let me mention that the Mississippi Wireless Communications Commission has expressed concerns about FirstNet's commitment to hardening the network. You mentioned this in your testimony, the need for FirstNet infrastructure to be hardened. Can you discuss why that's important? And is it more important in the rural areas? Also, in your experience, how do broadband needs differ between urban and rural communities with respect to providing emergency medical services?

Dr. DARSEY. Sure. Thanks for the question. I'll give you an example. A couple of years ago, we had a tornado, as you well remember, that took out a hospital in the northeast part of our state. The Medical Center has got a pretty robust program to respond to that, and we did. The challenge in that was it took out a couple of commercial towers, but it did not, after a fairly close hit, take out one of our hardened public safety communication towers.

What that did for us is we lost all ability to communicate data out of that area, which was vital in moving and evacuating the hospital, nursing home, and recovering the people that were there. That's the piece that is the concern that I think we share, all of us here, of how do we make that as hardened as possible.

In terms of rural and urban, from a medical perspective, we can do a lot more, as our team is showing in Mississippi and other states, if we know about the patient well before they get close to a hospital. If we can reach out and touch the stroke patient in the middle of the Mississippi Delta, we can dramatically increase their chances of survival and meaningful use after arrival to the hospital.

Currently, we're doing that over radio, and it's working really well. But now imagine that in the rural areas. In urban areas, it's vital in the medical world, but here, we're 5 minutes from multiple hospitals. Now take that as 45 or 50 minutes away, and what we can do with broadband data in that time is truly lifesaving and a saving of healthcare dollars. There's a nexus here that FirstNet can combine both of those.

Senator WICKER. Thank you.

Mr. Sambar, I'll take another round later on and let you respond to that.

At this point, Senator Schatz has graciously yielded his time to the Ranking Member of the Full Committee, Senator Nelson, who is recognized for whatever opening statement he might make as well as questions.

**STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA**

Senator NELSON. Mr. Chairman, I will be merciful, and I will insert the opening statement into the record and just note that I'm delighted to be working with Senator Klobuchar on updating the 9-1-1 systems, which so many of are still stuck in the analog era.

[The prepared statement of Senator Nelson follows:]

PREPARED STATEMENT OF HON. BILL NELSON, U.S. SENATOR FROM FLORIDA

Welcome to our witnesses. Much has happened since the subcommittee's last oversight hearing on FirstNet. The announcement of FirstNet's private sector partner—AT&T—earlier this year marks a major milestone in the development of this network. Very soon, this network will move from the drawing board into the hands of our first responders.

This hearing comes as all 50 states, the District of Columbia, and U.S. territories are reviewing the initial state plans FirstNet has developed for deploying the FirstNet radio access network in those locations. And I am pleased that five states have already made their intention to join the FirstNet network clear. Deputy Secretary Brown, I hope to hear from you today about why the Commonwealth of Virginia became the first state to opt in to the FirstNet network.

Providing public safety with essential advanced communications technologies is a national imperative. The FirstNet network is an essential step in this process—and I am glad that it is so close to becoming a reality. But, at the same time, another part of the Nation's public safety communications architecture needs Federal attention. Our nation's 9-1-1 systems are falling behind the times with most stuck in the analog era while the world has moved to digital.

That is why I have joined with Senator Klobuchar to develop the Next Generation 9-1-1 Act of 2017. That act will provide Federal support and assistance to help states and localities develop and deploy next generation 9-1-1 systems and create a public safety communications architecture that is digital from the citizen all the way to the first responder.

First responders put their lives on the line for each one of us every day—something that we here in Congress were starkly reminded of just a few weeks ago. First responders deserve a state-of-the-art advanced nationwide interoperable wireless broadband network to help them do their jobs to protect us all. By all indications, the FirstNet network is prepared to deliver just that.

And here on this committee, we'll continue to do the necessary oversight of this public-private partnership to make sure that it lives up to the critical public safety mission we gave it back in 2012.

Senator NELSON. Thank you, Senator Schatz, for your graciousness and your courtesy.

Mr. Poth, if you can, explain to the Committee in a little more detail why AT&T's bid offered the best value for public safety. I'm very pleased that FirstNet has finally entered into this long-term contract with the private sector partner. This idea of interoperability has bedeviled us forever. It has bedeviled us, as Senator Wicker knows, on the Armed Services Committee and our Nation's military as well, and they are finally getting the interoperability of our radios.

But explain a little more about why your bid offered the best value?

Mr. POTH. So the process that FirstNet undertook since our inception is to understand truly what the public safety needs are and how they can maximize the broadband network technology. Through that process and over the years, we were able to develop an RFP with 16 objectives that both the states and public safety thought were important, and we put that into a formal proposal process and a highly competitive one.

We didn't go out looking for AT&T or another vendor. We went looking for someone that could maximize the value for public safety and also provide the financial sustainability that's required for this to be successful for years to come. Through that process in over an 18-month period, numerous bids were in, and they were analyzed with a great level of detail, and through that process that the Department of Interior assisted us with as the acquisition experts, AT&T came out as the prevailing solution and prevailing company to—

Senator NELSON. The question is why?

Mr. POTHE. Well, the value that they're bringing with their existing infrastructure, their ability and size, their financial sustainability to be able to take on something of this nature, and their lowest risk approach to implementing this in the shortest time were some of the value propositions that made them more competitive than some of the other bids that were analyzed.

Senator NELSON. Mr. Sambar, anything else that this public-private partnership offers to state and local first responders, other than him saying that's why they picked you?

Mr. SAMBAR. Yes, Senator. There is one specific benefit that I would point to that I think few wireless companies or companies in the world could offer, which we offered after the initial proposal during discussions with FirstNet. The initial RFP that FirstNet released contemplated building out a public safety broadband network using just Band Class 14, and we responded accordingly.

But through discussions, we decided we would extend it beyond just the Band Class 14, which is the spectrum that was allocated for first responders in 2012. We said we would open up all of the spectrum bands within AT&T. So, essentially, what that means is the day that a state opts in, they have immediate access to AT&T's entire network, all spectrum bands, and they will see the benefits of FirstNet on all spectrum bands, all wireless towers from AT&T that are LTE enabled.

So I think that's a tremendous benefit that FirstNet was not expecting when they contemplated the original RFP. But when we brought that, I think they were very pleased with that, and that helped us.

Senator NELSON. So you're going to have a level playing field for all device manufacturers?

Mr. SAMBAR. Absolutely, sir.

Senator NELSON. All right. Deputy Secretary Brown, Virginia became the first state to announce that it would opt-in to this public safety wireless broadband network. There must have been some folks in Virginia that suggested that you opt-out of the network and chart your own path. Tell me the benefits to Virginia's first responders of the Governor's decision to opt-in.

Mr. BROWN. Thank you, Senator. The decision to opt-in was really based on looking at the benefits that come with opt-in, the immediate priority and preemption services that would come for those who are subscribers to the network. And a major thing, Senator, is the fact that it comes at no cost to the Commonwealth. We have been disproportionately impacted by sequestration and other aspects. The Governor had to close a \$300 million budget deficit, and

so looking at the cost that it would take to build a network and sustain it, it just was not feasible.

The benefits were clear in terms of preemption, deployable assets that were being offered, and the fact that our public safety stakeholders would guide the buildout of the network. We look forward to, again, ensuring that the rural buildout is there, the services and capabilities come with the network.

But we did weigh it. We looked at it closely. But given some of the unique features of Virginia, including the fact that we will be inaugurating a new Governor within six months, we thought that it would be best to begin the start of building the network with FirstNet and AT&T versus beginning this massive multimillion, multibillion-dollar project of opting out and taking on all the risks and responsibilities related to that.

Senator NELSON. Thank you, Mr. Brown.

Thank you, Mr. Chairman.

Senator WICKER. Thank you, Senator Nelson.

Senator Hassan.

**STATEMENT OF HON. MAGGIE HASSAN,
U.S. SENATOR FROM NEW HAMPSHIRE**

Senator HASSAN. Well, thank you very much, Chairman Wicker and Ranking Member Schatz and Ranking Member Nelson as well. Thank you to all of the witnesses for being here today, and a special thanks, as you all recognized, to our public safety community, because that's who we want to support with this effort.

As a former governor, I am keenly aware that states are often in the best position to make critical decisions about what best suits them, especially a state like mine, which has some pretty unique terrain and some rural areas that really don't have a lot of access. So I think that the legislation that authorized FirstNet got it right when they left the decision of opt-in or opt-out to our nation's governors.

Now that a national FirstNet vendor has been chosen, states are obviously carefully weighing their options, and I've heard from constituents in my state that one challenge they're facing in gathering as much information as possible before making this decision is that they're facing challenges when it comes to comparing the national plan with state plans that are being proposed as alternative.

The challenge includes issues such as having to acknowledge the terms of agreement that do not permit them to actually share information in the plans with key people in their state. So, literally, our SPOC may not be able to share information with members of the Governor's staff in New Hampshire, which makes it incredibly difficult for them to make an informed decision.

So my question to both Mr. Poth and Mr. Sambar is how are states supposed to stay informed and make this critically important decision without, in every case, being able to compare and contrast the national plans with state plans?

Mr. POTHE. Thank you for the question, Senator. With the terms of use and the data that we provided to all 56 states and territories, the detailed information, some of which is confidential, and, as you can imagine, since this is a mission critical public safety network, we have to be very protective. I certainly can tell you and

assure you that all state officials that need access should be getting access to that. We do have to be careful, and we'll limit access to any vendors or consultants that want access to that data.

So that's the restrictions that we're trying to be very careful with because of the nature of this project and the program. But it's absolutely our commitment and our intent with all the states that they have the most information possible so the Governor can make the most informed decision.

Senator HASSAN. Mr. Sambar, anything to add?

Mr. SAMBAR. Yes, Senator. We initially envisioned when we launched the state plan portal on June 19 that we would have roughly 50 user IDs and passwords per state. That would be 50 individuals who would access the portal. We immediately got feedback that states wanted more, and we are offering more. So we have a state right now—as a matter of fact, 227 login and user IDs have been issued.

So it shouldn't be an issue for a state if they have additional people. The only requirements we have, Senator, is that, as Mr. Poth said, it's an official e-mail address, somebody in the state who works for the state or an authorized consultant. Either of those is fine. We just don't want like @gmail, @hotmail, someone that we don't know in there.

Senator HASSAN. Right. OK. Well, then, I will make sure that I take that information back to my state and make sure they reach out to you and get that cleared up.

The other thing I wanted to explore with both of you—and we talked a little bit about it, Mr. Poth, when you came to meet with me in my office, which I appreciated very much. Our greatest challenge for commercial connectivity and public safety connectivity is our sparsely populated rural parts of our state, particularly up north. We've had situations of missing children, you know, critical murder investigations, very challenging natural disasters like ice storms, and they're particularly challenging, as they are for many of our states, in remote areas.

We have heard from vendors who want to serve as an alternative to the national plan, and we've heard from FirstNet and AT&T that rural coverage will be a priority. But no matter who New Hampshire chooses as its vendor, we need more than an informal assurance that when it comes to ensuring that all of our first responders all across the granite state have interoperable access.

So with a state like New Hampshire, which has major gaps in public safety communications as well as commercial voice and wireless service in some rural areas, how will FirstNet ensure that these first responders and these areas will not get left behind? And what kind of accountability measures are there? Let's say 3 years from now, we're still not getting the coverage and access we need in these difficult parts of the state. How do the states hold you all accountable for that?

Mr. POTHE. The state plans that everyone is currently reviewing is what AT&T's and FirstNet's commitment to that state will be if they opt-in. So when a state does opt-in, that becomes our commitment, and then we contractually will hold AT&T responsible and accountable to execute to that plan that the state has agreed to. So that's the first part. And a big component of those plans, as you

mentioned, is the rural coverage, whether it's with terrestrial sites or through the use of deployables and how those would be accomplished, and that's why it's critical that the states are doing this review right now so that they have a full appreciation of how that could really work in a state.

So once they have made that decision, then we will contractually, with the master contract that we have with AT&T—we will use that as a roadmap. And over the years, not just the first 5 years, but for the next 25 years, through service level agreements and metrics, we'll be holding AT&T responsible and accountable to execute to that plan.

Senator HASSAN. Thank you.

Mr. Sambar, anything to add?

Mr. SAMBAR. Senator, I've heard loud and clear with the initial RFP and as I've visited the states, especially New Hampshire—I've been there three times myself, met with the Governor twice. We visit there almost every week—that rural coverage is a concern. We're embarking on an aggressive buildout program over the coming years to build out rural areas across America where there is no coverage.

As Mr. Poth said, there will always be areas that will be uncovered in any radio access network in the world. But we do have solutions for that, and the main solution is what we call deployables, and that's a mobile self-site. So the White Mountain National Forest in northern New Hampshire, for example—the ability to get a deployable up there and deploy a network where there is no network is very important.

Today, in the west, in California, there are wildfires burning, and we actually have two deployables that are deployed right now. I brought a picture of one of them. It's a—pass this around if you'd like. But it's a large truck with a mobile network with the fire spreading in the background.

Senator HASSAN. Right. I've seen those before, yes.

Mr. SAMBAR. Great. So we will keep building out—

Senator WICKER. We'll put it in the record, without objection.

[The graphic referred to follows:]



Mr. SAMBAR. We'll be building out 72 of those around the country, so you will have very quick access to deployables by just calling AT&T or FirstNet—any state will—to be able to cover those areas that are uncovered.

Senator HASSAN. I've gone well past my time. Thank you for your indulgence, Mr. Chair.

Thank you both for the answers.

Senator WICKER. But, Senator Hassan, your question was how do the states hold FirstNet and AT&T to account.

Is it your position, gentlemen, that adherence to the state plan amounts to a legally binding contract?

Is that sort of your question, Senator Hassan?

Senator HASSAN. Yes, it's a legally binding contract, and then also—

Senator WICKER. And what the recourse is.

Senator HASSAN. What the recourse is for states—

Senator WICKER. If you don't mind, Senator Klobuchar, before I recognize you, could we drill down on that?

Senator HASSAN. Thank you, Mr. Chair.

Mr. POTH. I think there's an important clarification. So it will be a legally binding contract between FirstNet and AT&T to execute to that plan. It will not be a contract, *per se*, with a state. It is a commitment to the state.

Now, how do the states hold us accountable? As FirstNet shifts gears from developing a proposal and making an award, for the next 25 years, we are going to be in a position to work with the states continuously—and public safety in all of those states—to make sure that all of their expectations, both from the state plans and in the future, are being met and translated, if appropriately, back into contractual actionable items. Or if AT&T, for example, is not meeting the requirements or the expectations, FirstNet, on behalf of public safety and those states, will enforce the terms of the contract.

Senator WICKER. Thank you very much.

Senator Klobuchar?

**STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Well, thank you very much, and thank you to the panel.

I've very much enjoyed working with Senator Burr on the Next Generation 911 Caucus—we chair that—and then recently working with Senator Nelson on our bill. I just want to follow up on some of the questions the Chairman and Senator Hassan had. Like them, I'm very concerned about rural areas. Minnesota has large expanses of rural areas, and ours can get really cold. In fact, 1 day, northern Minnesota registered colder than Mars. This is a true story. The Range Rover was on a warm part of Mars, and we were colder than Mars. So I would subscribe to the belief that we do have unique needs in our states.

First of all, I'll start with one of our unique needs and ask you, Mr. Poth, if there are any updates on the coordination with Canada since we share a large border with Canada in Minnesota.

Mr. POTH. There's a lot of good news. Canada is using the same exact spectrum that we'll be utilizing with AT&T, so there are a lot of synergies. We spend a great deal of time coordinating and comparing notes with Canada and the public safety entities in that country as to what we're doing so that there is—the interoperability between the countries will also be realized.

Senator KLOBUCHAR. Very good. And then this came directly from our state team, and that is that I know you've been working directly with public safety officials to tailor these unique state plans. As I mentioned, we face some unique public safety concerns, some of them shared by Senator Hassan, like snowmobilers out in

the middle of winter and losing their—running out of gas and not being able to call.

So states have up to, as I understand it, 45 days to review the plans and then ask questions, and I know this process is an important part of ensuring that the network that eventually gets built addresses the public safety needs of each state.

So, Mr. Poth, what steps is FirstNet taking to ensure states receive timely answers to their questions?

Mr. POTHE. We're making sure, through this 45-day period, that they understand what we're presenting, and then as the questions and comments—and we've had hundreds of comments from throughout the country and the states to get clarification or to get a greater appreciation. We're responding to those as quickly as possible in real-time during this period. Our intent is that on August 4, the states will have had the time to provide their initial comments and observations, and if we haven't responded to them by that point, we certainly will be doing that to finalize any of the plans that we are targeting to deliver in September.

Senator KLOBUCHAR. OK. Well, I'll be in touch if we're having trouble getting answers.

Mr. POTHE. Absolutely. Please do.

Senator KLOBUCHAR. Thank you. And then I mentioned earlier the 9-1-1 work that the caucus is doing here and that the Committee is doing, and I believe that this system is urgently in need of upgrades.

Mr. Sambar, what opportunities do you see coming from an integration of FirstNet and Next Generation 911 networks?

Mr. SAMBAR. Tremendous opportunity, Senator. As was noted earlier, most of those are TDM POTS-based systems. They're voice only. There's no data connectivity between the PSAPs, the public safety answering points, and first responders in the field nor the individual folks that are calling in to the PSAPs. So there are tremendous opportunities.

We have states today that are adopting a Next Generation 9-1-1 system. That gives the ability for a private citizen calling in to be able to pass pictures, videos, other data to the 9-1-1 center and immediately pass it out to first responders. The FirstNet network will be that final leg where the PSAP can pass data out to the first responders on a dedicated network just for those first responders so it'll ensure a seamless passing of information. So I think there's tremendous opportunity for those networks to work together, Senator.

Senator KLOBUCHAR. Very good. And, also, this is a new form of communication. It's all great, and it's going to help first responders save lives. But the new technologies—with any new technology, as we know, comes new risks. What is AT&T doing to detect and prevent cyberattacks on the FirstNet network?

Mr. SAMBAR. On the FirstNet network, we have taken—based on the contractual obligation with FirstNet, we've taken a lot of steps and are taking steps in the future. So there will be—specific devices for the FirstNet network need to be certified by AT&T for cyber. As you go through the network, we go into what's called the evolved packet core, which is the core network where all of the data traffic rides. We are building a separate evolved packet core

for FirstNet for first responders data. So that data will never touch our commercial core network. It will only stay on that specific core network.

Past that, we have a security operation center that we are building specifically for this network. AT&T has security operation centers, but in this case, we're building one just for first responders. And then identity, credentialing, and access management, which was mentioned earlier—we're taking extensive steps to ensure that we get the right people on the network through credentialing and the wrong people stay off of the network. So we're taking a number of steps that we've gone through with FirstNet to ensure that this network is secure.

Senator KLOBUCHAR. OK. And just one last question, Mr. Chairman.

Mr. Brown, as I was talking about the state plans with you here for Virginia, that question I asked about the question and answer—can you talk about the importance for the state team of getting timely answers and getting information?

Mr. BROWN. Yes, Senator. I would say that FirstNet and AT&T have been very responsive. We have a collaborative group of stakeholders through our statewide Interoperability Executive Committee who is reviewing the state plan and have been engaged in this for a while, and we're actually, right now, in the final stages of planning several different regional conferences across the Commonwealth, including in our urban areas, in which FirstNet and AT&T will be there to answer questions directly from those stakeholders.

So they've been very engaged. Our public safety stakeholders have been satisfied with the responsiveness, and we expect this to continue as the network is built out.

Senator KLOBUCHAR. Thank you very much.

Senator WICKER. Well, Mr. Sambar, I said we would get back to the hardening issue, and Senator Klobuchar has touched on one aspect of it. I was talking to Dr. Darsey, and he mentioned the tornado in Louisville, Mississippi, and how fortunate and foresighted leaders were in making one of the towers hardened.

Are AT&T's commercial networks hardened in every respect and considered, quote, "public safety grade?"

Mr. SAMBAR. Senator, I will tell you that I have not seen nor do I believe there is a specific definition for public safety grade. But AT&T constructs our towers to meet state and Federal requirements, to withstand things such as wind, earthquakes, et cetera. So we've gone to great lengths to construct our network in a manner that is as reliable as possible, and we believe that there will always be instances where towers will get knocked down. It's a function of mother nature.

In the case that Dr. Darsey mentioned, the solution there in a FirstNet world is these deployables that will have a defined response time, relatively short, to be able to come out to that area and immediately provide network communications in an area where towers have been knocked down, network communications, not just voice as he mentioned, but also the data communications that first responders desperately need. So we think that we have a solution in our existing network, which is sufficiently hardened,

as well as in deployables that we can get to an area as quickly as possible and put up a network where there is none.

Senator WICKER. Mr. Poth, is public safety grade a term of art?

Mr. POTHE. Somewhat. The key is, as Mr. Sambar—

Senator WICKER. Maybe we need to define it.

Mr. POTHE. Well, we are working with AT&T, and all of the sites that are—the dilemma that we have is which site is more important than another site. Is your site in Mississippi more critical than one in Nebraska? Absolutely not. They're all important. So AT&T, both with their existing infrastructure and new sites that will be built, as Mr. Sambar said, are meeting not only the state and Federal rules, but we're trying to make sure that they are hardened. But as he pointed out, I'm not aware that a public safety hardened definition is anything that we're applying.

Senator WICKER. Mr. Poth, what will FirstNet do to ensure that its network and service arrangement with AT&T will leverage innovative products and applications in the marketplace that can improve public safety and the delivery of emergency services?

Mr. POTHE. As has been mentioned by others during their testimony, one of the things that we're most proud of at FirstNet also is that we have developed our own lab out in Boulder, and one of their focuses is innovation and technology. And working with our sister organization, PSCR, you may recall, Senator, in the statute, there is actually \$300 million set aside for public safety research and innovation, and just a couple of months ago, they awarded the first \$38 million in grants to universities and companies to continue to push public safety innovation and technology. Our expectation for years to come is that FirstNet will be advocating and pushing innovation for the benefit of public safety.

Senator WICKER. Thank you very much.

Senator Markey is next.

STATEMENT OF HON. EDWARD MARKEY, U.S. SENATOR FROM MASSACHUSETTS

Senator MARKEY. Thank you, Mr. Chairman, very much.

This is a very important hearing, and one of the key issues, of course, is the ability to locate a fellow first responder in an instrumental ingredient in any of the rescue efforts. This coordination is, without question, central to the ability to be able to ensure that in a dense, urban area, simply knowing a first responder's longitude and latitude coordinates may not be enough. We must also know their altitude or their Z-coordinate so that a more precise identification can be made.

We need to know that there is a battalion of firefighters battling a blaze on the fourteenth floor of a building. We need to know the EMS is treating a patient on the lowest floor of an underground parking garage. We need to know there is a police squad engaging a suspect in an underground metro shop. These enhanced location services are potentially lifesaving, and we must ensure they are in the hands of our first responders as soon as possible.

Mr. Sambar, how quickly can AT&T bring those lifesaving technologies to FirstNet?

Mr. SAMBAR. Senator, we've actually had a lot of discussions about this just over the past couple of weeks with this technology group, as he mentioned, in Boulder, Colorado—

Senator MARKEY. That's why we're having the hearing—for conversation that, you know—have peace and tranquility on the panel.

Mr. SAMBAR. Perfect timing, I guess, Senator.

Senator MARKEY. Yes, perfect.

Mr. SAMBAR. There are solutions out there for, as we call it, Z-axis location, and we understand just how important that is to public safety. The example we always use is a firefighter in a burning building—smoke inhalation, and he's down and needs help. It's vitally important that we provide that.

It is a contractual requirement with FirstNet. We will absolutely develop that. The concerns that we have at this time is the maturity of the technology and ensuring that that technology works at times when it should. So, for example, when a building—when the power goes out in a building, if there are pressure differences in the building that create a bio fire, how do we account for pressure differences.

Some of the solutions on the market today require pressure as well as beacon systems. We want to make sure that all of that is vetted correctly. So working closely with the FirstNet Authority, we want to make sure that we bring that to market when it's ready, when it works correctly, and as quickly as possible.

Senator MARKEY. So, Mr. Poth, are you happy with the progress that's being made? How can we telescope the timeframe that it is going to take for AT&T and you to reach an agreement that can, in fact, ensure that those services are available?

Mr. POTH. Yes, and we do, with our contract, have an agreement. So by 2020, the solution set will—should be available. As Mr. Sambar said, some of the preliminary technology exists, but it is not in a position now to be deployed, and we—

Senator MARKEY. Why so long? Why will it take until 2020, Mr. Poth?

Mr. POTH. That's the target that we set in the contract. There is technology that exists today, but we don't believe it is yet robust enough to be put out into the field. But we believe it's going to come along. If it moves up quicker, we are certainly going to advocate and work with AT&T to accelerate that.

Senator MARKEY. But you are saying by 2020, it will be in place, Mr. Poth?

Mr. POTH. In the contract, the enhanced location services—

Senator MARKEY. In the contract, yes, but in reality.

Mr. POTH. Well, we—I'm very comfortable and confident that AT&T will be able to meet that requirement.

Senator MARKEY. Are you confident, Mr. Sambar, that you will be able to meet that goal, 2020?

Mr. SAMBAR. I am, sir.

Senator MARKEY. OK. Good. Because life is 20 percent concept and 80 percent execution, so it's the execution part that we're—

Mr. SAMBAR. Unfortunately, in this one, technology is the third leg in that—

Senator MARKEY. Right, and I appreciate that.

Mr. SAMBAR.—and the technology is not mature, but we are working hard to get it there as soon as possible.

Senator MARKEY. Well, that's what we want you to do. Maybe you walk over to those people and just say, "I made a promise that we get it done."

Mr. SAMBAR. Hurry up.

Senator MARKEY. Yes, hurry up, you know. That's usually a good way of getting things that are in a pile—that the key thing is pulled out, and all of a sudden, the attention is paid to it. So I'd appreciate you doing that, Mr. Sambar.

And, finally, FirstNet is supposed to establish this network, but, Mr. Sambar, given that states and municipalities already have existing public safety networks and devices, how will FirstNet work with and utilize existing communications resources to build out and deploy a national public safety broadband network? Can you commit to decreasing transition costs to the greatest extent possible?

Mr. SAMBAR. Absolutely, Senator. We have had a number of states as well as Federal agencies that we've been in communication with, and some of the states have been very direct that they're interested in us putting our LTE equipment on state, city, municipal-owned assets. That would give them the benefit of remedy from AT&T through a lease agreement. It would also give us the benefit of being able to build out the network faster.

So we are actively in discussions with a number of states as well as Federal entities to see what we can do to increase the speed of the buildout and share costs with the states. I think that's the benefit of this public-private partnership that we are in.

Senator MARKEY. Mr. Poth, do you want to add anything?

Mr. POTH. I think he hit it.

Senator MARKEY. So you're just—synchronicity between—you think it will—

Mr. POTH. Well, we're not in a honeymoon period, but no.

Mr. SAMBAR. We talk a lot, so we—

Mr. POTH. It is a, you know, significant partnership and an endeavor, but we're also going to make sure that AT&T meets all the requirements.

Senator MARKEY. And I understand that. It's good that a couple of weeks ago, you started talking in anticipation of this hearing, but it would be good if you were talking in the next 2 weeks after the hearing, because you can be sure that there will be another hearing, and it's always better to start out where you're going to be forced to wind up anyway. So at that next hearing, you know, all of these things will be called much more closely into account so that we're sure we're on schedule.

Thank you all so much.

Thank you, Mr. Chairman.

Senator WICKER. How do you spell synchronicity?

[Laughter.]

Senator MARKEY. It was a great song—who was that song—the Police? Yes, the Police. So I got the beat. I don't know if I have the spelling. Thank you, Mr. Chairman.

Senator BOOKER. I'd like to just question for the record how much rhythm, indeed, the Senator from Massachusetts has?

Senator WICKER. It is subject to question. Now, we're going to have order in this Committee.

Senator MARKEY. With the exception of the Senator from New Jersey, I'm competitive with everyone else here, OK? So I—

Senator BOOKER. Very low bar.

[Laughter.]

Senator WICKER. Senator Inhofe is recognized.

**STATEMENT OF HON. JIM INHOFE,
U.S. SENATOR FROM OKLAHOMA**

Senator INHOFE. Mr. Chairman, I'm still waiting for the song.

[Laughter.]

Senator INHOFE. Well, first of all, so that you'll be aware of it, the reason that we have some late arrivals here—we always have committees—and I was even chairing one a few minutes ago so I wasn't able to get here for the first entire hour. And one of the problems with that is anything I'm thinking of to ask you, you've probably answered it at least twice already in this hearing.

So bear with me in that, because I have some interest—I was listening to Senator Markey—and, by the way, before he leaves, I might observe that he and I don't always see eye to eye on issues, but we have one thing in common. We will be calling you in 2020 to make sure that it's on time, all right?

I'm concerned about the—how it works. To me, it's very difficult. You've got AT&T, and then you've got the network, and you're dealing with states and communities and counties that are totally different. Now, we're a rural state. To me, that would pose a lot more problems, because when Senator Markey was talking about one thing is on the first floor and something else is on the second floor—well, these are all scattered—we don't have different floors with different capabilities to coordinate.

So I'd kind of like to talk to both of you about the unique problems you have that I see, as someone who is not really well versed in this area. But I do understand my state of Oklahoma is a rural state, and it would be much more difficult, I would think, to coordinate these things. What are your thoughts about it, either one of you?

Mr. SAMBAR. Senator, I would say that at the very core of what states are looking for, whether it's a state that has dense urban populations or spread-out rural populations—they're looking for broadband coverage that's fast, reliable, and gives priority access to first responders. So at the very core of what we need to provide for first responders, that's it.

So when we have discussions in Oklahoma versus Manhattan, we hear virtually the same thing, which is we need coverage where the first responders operate, which is everywhere. So that's—

Senator INHOFE. But what if there is no coverage there?

Mr. SAMBAR. So the backup to that coverage would be deployables. A deployable is a—I showed the picture earlier. I won't show it again. But it's essentially a large truck. It's a mobile cell tower that connects to a satellite. So any rural area where there is no coverage whatsoever or where a natural disaster has knocked down a tower, for example, we can drive one of these trucks into that rural area, pop up an antenna, and create a cell phone connection

as well as a broadband connection for first responders where they would have priority access to it.

The doctor was saying earlier a situation—he was giving an example of where broadband towers had been knocked down. It's a perfect example of where we can bring in this basically mobile tower.

Senator INHOFE. How many of these do you have?

Mr. SAMBAR. To date, we have a fleet of over 700 national disaster recovery vehicles. That is not what I just described. That's the number of different vehicles. We are building 72 of these just for the FirstNet program that will be deployed all across the United States to give us a defined response time, which FirstNet has defined in the contract, to make sure we can be on station very quickly.

Senator INHOFE. Anything to add to that, Mr. Poth?

Mr. POTH. Rural coverage has been a problem forever. Even in land mobile radio, the walkie-talkies, rural coverage, you know, is always very challenging, as you point out. Congress, in particular, with FirstNet, had the foresight to also make sure that rural coverage was a critical component of the FirstNet solution going forward, and that's one of the things that we are very focused on to try to improve.

It is going to take, you know, years to get to a point, you know, to increase the rural coverage. One of the things we have in our agreement with AT&T is that rural coverage in every phase of their buildout is going to be addressed and start chipping away. But rural coverage, whether it's land mobile radios, broadband, any types of things, as you know better than anyone, Senator, is very, very challenging, and we hope that this is a first step in trying to solve some of that.

Senator INHOFE. Well, you know, Mr. Poth, being the—FirstNet is an independent authority within the Department of Commerce. When you first embarked on this, did you look for others as examples, things that have worked as independent authorities, or are you forging new areas?

Mr. POTH. I think we're forging new areas of how we work effectively with the private sector. The model that we pursued in trying to solve, in this example, rural coverage—we went out to the private sector and said, "What is the best approach to solve some of those problems?" As an independent authority within the government, we've been very effective and looked at other models as to what's working.

But the Department of Commerce, NTIA, the FCC, all those other components that are critical to this approach, have been very supportive and it has worked very effectively for us, and that's why I think we're glad today to be reporting that we are, in fact, 3 months ahead of schedule from what the original intent was. We do have a contract awarded. We actually have a contract awarded that is providing the needs to public safety and is financially sustainable. This independent authority is not going to come back to Congress and ask for additional funds, ever, and I think that's a significant plan that Congress had envisioned when they stood this authority up.

Senator INHOFE. We don't very often around here have anyone ahead of schedule. I mean, generally, it's a—we ought to move you over into DOD. I think we can solve some problems over there.

[Laughter.]

Senator INHOFE. But I'm looking forward to—and I think each state represented around this table here probably believes that it has more natural disasters and other types of disasters. In our state of Oklahoma, as you well know, we have commonplace tornadoes, the horrible fire that took place just 2 months ago, and so it's such a diverse array of problems that are out there that you guys have to figure out some way to deal with, and I'm glad you're doing it. I'm glad you're ahead of schedule. I'll be looking forward to monitoring your success.

Senator WICKER. Dr. Darsey, Mr. Goldstein, and Mr. Brown, where there isn't buildout, to what extent are deployables going to do the trick?

Dr. DARSEY. I'll speak first from the medical perspective. They're great in disaster recovery. We have some deployables with our own land mobile radio network currently. To their point, rural coverage cannot be 100 percent, while I would love it to be. The challenge for us as operators is to know where the coverage is and is reliable.

One of the biggest things we can do from a medical perspective is—a lot of technology has been talked about here, but there's a whole missing piece, and that's how to operate within this new technology. That's the piece that is as challenging as some of the technology we're discussing here—is how do we develop, in my world, medical protocols to balance what paramedics, flight nurses, flight paramedics, physicians, whoever is in the field, can communicate using the network.

So, to me, I'd love to have 100 percent rural connectivity. But even more important is the ability to know where it is, and deployables are great for disaster recovery, but we need to know where it is and how to get it, and then, more importantly, how to use the technology that's there.

Senator WICKER. So a work in progress.

Mr. Goldstein, what about that question?

Mr. GOLDSTEIN. Mr. Chairman, a couple of points. One, deployables certainly can be helpful in emergency situations, but the nature of an emergency situation is that you may not be able to get a deployable close enough. So that can be a problem at times. More broadly speaking, there are specific milestones in the contract that AT&T must meet with respect to buildout in rural areas, you know, over the next 25 years, and FirstNet is going to have to find a way to ensure the accountability of that buildout over time. Thirdly—

Senator WICKER. Milestones with regard to—

Mr. GOLDSTEIN. The amount of rural buildout that has to occur over the life of the contract in specifics points in time. My report discusses this a little bit. And, thirdly, there may be some difficulties with respect to this if you have, for instance, tribes that span multiple states, and some states have opted in and some states have opted out. That may add some confusing components to exactly how that might work.

Senator WICKER. Mr. Brown, anything to add on that?

Mr. BROWN. Yes, Mr. Chairman. Our priority right now is focused on working with our rural communities and FirstNet and AT&T to build out the network as best as possible in the rural areas.

Senator WICKER. Sure.

Mr. BROWN. But to the extent that we cannot get full coverage in those areas, deployable assets will definitely be useful in terms of emergency response as long as we can get some guarantees in terms of how quickly they can get there and make sure that they're there in time to initiate the response. Some of our most devastating natural disasters over time in Virginia have been in our rural areas, flash flooding, et cetera. So we definitely—this is a major priority of ours.

Senator WICKER. Thank you.

Senator Booker, I appreciate you indulging the Chair. So take an extra minute or two if you need to.

**STATEMENT OF HON. CORY BOOKER,
U.S. SENATOR FROM NEW JERSEY**

Senator BOOKER. No, sir. In fact, I'm going to try to take less than my 5 minutes just to bring balance to the universe.

Gentlemen, first of all, thank you all for your hard work and your focus on this. As a former Mayor, I was stunned that when we faced—especially environmental challenges—how inadequate often our communications were, whether—obviously, Hurricane Sandy has been talked about. But we had an earthquake—yes, an earthquake—in New Jersey. As a guy who survived the 1989 earthquake in the Bay Area in California, I was just astonished about how my community was reacting. But as a mayor, I had—our communications fell, and they failed, and it was unacceptable should it have been a much more serious earthquake.

I'm proud of my state that New Jersey is using the FirstNet spectrum for sort of exciting safety broadband projects, one overseen by Fred Scalera, as you all know, or, Mr. Poth, you know. He's an expert in emergency communications. The project is spread throughout the state and includes what is a critical artery of the Route 21 corridor between Camden and Atlantic City. It explores the use of mobile systems to be deployed in case of emergency, like some of the ones I discussed, when communications go down.

I think that the project could be a model for the country and greatly contribute to how we keep our networks moving and running during times of crisis. It will help keep emergency personnel connected, which is critical, as we all know. But, additionally, those units, as was discussed, are mobile and they can be used to aid other states in the country when they're needed. We are really hopeful about the implications of this project, as has been discussed.

So we know that these mobile units were actually deployed from New Jersey during the Pope's visit last September, and, obviously, if the Pope was visiting and these units were used, they are blessed units. So I just want to know what was the—what FirstNet learned from the New Jersey project, and how does FirstNet envision the use of these assets as was discussed in the future? That's my only question.

Mr. POTTH. Thank you for the question, and you've highlighted one of the things that we're really excited about, because the state of New Jersey did forge a lot of new territory for us, and we got great key learning conditions from the use of deployables. And while we don't believe deployables are a band-aid or a permanent solution for rural coverage, it is absolutely a viable solution set, thanks to all the work that your state did, because you exercised those deployables extensively. You mentioned the Pope—all these other events.

I distinctly remember Mr. Scalera talking about—because you had deployables in a Suburban. So anywhere a Suburban can get, whether it's rough terrain, they're able to stand up a network in that area, and it really gave us a lot more confidence, as we considered solutions and alternatives during the bid process, that the use of deployables was actually a very viable, vibrant solution set to provide coverage in those areas that might not exist.

So there was great success from what they—New Jersey was able to do. You know, as you mentioned, they went and helped the Philadelphia Police Department with the Pope visit—lots of those. Harris County, Texas, was using that concept during the Superbowl. So there are a lot of key learnings that we're now using in our nationwide solution set.

AT&T has already been doing this, as mentioned, for years with their fleet of 700 deployables, now with the 72 dedicated, which are much smaller units, which is going to give us the ability to maybe get those into areas that are a little tougher to get to. We're very excited about that. That is an absolute addition to the solution that we're going to be able to bring to public safety quickly.

Senator BOOKER. Thank you very much.

And I can just basically sum up everything he said, Mr. Chairman. I think he said that Mississippi could learn a lot from New Jersey. I think that was really the essence of his message.

[Laughter.]

Thank you very much, Mr. Chairman.

Senator WICKER. And vice versa. I know that Senator Schatz is on his way back. But I do have a couple of extra questions.

Mr. Sambar, on the Band Class 14 spectrum, the 20 megahertz spectrum provided to FirstNet to create nationwide public safety wireless broadband, I think the testimony is that the existing commercial network may be used instead. So would you clarify to what extent we'll have that and for how long?

Mr. SAMBAR. To what extent you'll have the existing commercial network and for how long? Is that the question?

Senator WICKER. Yes, sir.

Mr. SAMBAR. So we will be building out Band Class 14 over the coming 5 years across a significant portion of our network. In the meantime, before Band Class 14 is built out, we will be using our commercial network. There are requirements in the contract with FirstNet over how quickly we need to build out Band Class 14. We have to hit those milestones in order to receive payments due to us from FirstNet. If we don't hit those milestones, we don't receive the payment. So we will be aggressively building out Band Class 14 for first responders.

Again, in the meantime, they will have access to all of AT&T's bands. So, you know, to say it simply, if you are a first responder, Senator, you will not know whether you're on Band Class 14 or any other AT&T band, but you will have the exact same experience, regardless of what band you're on on AT&T's network.

Senator WICKER. Your position is that the service is provided to the consumer and the public safety user—to them, it will be immaterial where it's coming from?

Mr. SAMBAR. The way I like to say—exactly. The way I say it is this. Public safety has been told for many years that the magic of FirstNet happens on Band Class 14, and that's—we've changed that. That's not correct anymore. The magic happens on the AT&T network, period, and it doesn't matter where you are, you're going to have the exact same experience. So we've extended it far beyond the Band Class 14 to our entire network.

Senator WICKER. Will you build out the class 14 spectrum only where it is economically viable, or will you build it out where there is a written requirement in the arrangement between you and FirstNet?

Mr. SAMBAR. We are building Band Class 14 where we need the capacity in our network. So in order to provide priority and pre-emptive services to first responders and have enough capacity for everyone that's on the network, including the first responders, there are places where we will need additional capacity, and that's where we're building—

Senator WICKER. Who will determine that need?

Mr. SAMBAR. AT&T, based on capacity triggers. Obviously, we've been doing this for a long time—based on capacity triggers that we see in the network, we build out Band Class 14 as additional capacity on individual—and this is done on a tower by tower basis.

Senator WICKER. Are you able to say what approximate percentage of the lower 48 land mass will be covered by Band Class 14 buildout?

Mr. SAMBAR. Unfortunately, I'm not, Senator. That's proprietary between FirstNet and AT&T. I would say again it's a significant portion, though.

Senator WICKER. Can you be more specific than significant?

Mr. SAMBAR. That would be proprietary, Senator. I apologize.

Senator WICKER. And what makes it proprietary?

Mr. SAMBAR. The specific details of the contract between FirstNet and AT&T. There's a number of specific details that are proprietary, Senator.

Senator WICKER. That is proprietary and not available to the public.

Mr. SAMBAR. That's correct, Senator.

Senator WICKER. Or to the Congress.

Mr. SAMBAR. That's correct, Senator.

Senator WICKER. So there would be no availability of coverage percentage or maps for each state?

Mr. SAMBAR. Oh, so—no, in that case, Senator, every state in the state plan portal can see exactly where their buildout is happening in the state, and there are multiple layers that they have to choose from. They can see 2G, 3G, 4G, LTE, Band Class 14, and they can see the buildout by year. So individual states can see what the

buildout in their state is. Is that the question you're asking? I apologize. So they can see what's happening in their state, so they know exactly where the buildout is going to be over the next 5 years and where the Band Class 14 buildout is happening in their state.

Senator WICKER. And I wonder, though, then in terms of this coverage—which you say it really shouldn't matter what band it's coming over—are you able to say what percentage of the lower 48 land mass will be covered in one way or the other?

Mr. SAMBAR. One way or the other?

Senator WICKER. Yes, apart, of course, from the deployables.

Mr. SAMBAR. So 99.6 percent of the U.S. population will be covered by AT&T's network.

Senator WICKER. But of the land mass.

Mr. SAMBAR. I don't have a percentage of land mass, no, Senator.

Senator WICKER. Will you be able to do that? Could you supply—

Mr. SAMBAR. I can get that percentage for you, absolutely, sir.

Senator WICKER. Thank you.

Senator Schatz.

Senator SCHATZ. Thank you, Mr. Chairman.

Mr. POTH, the goal with this national state-of-the-art first responders network recognizes the need to have a national approach to addressing emergencies, but national is not just the continental United States. It means all 50 states and territories. I know you've done several consultations with General Logan and the team in Hawaii. So I just want to ask a simple question. What have you found that is different about Hawaii?

Mr. POTH. I think there are a lot of great things that are different about Hawaii. I think one of the things is with the number of islands and how do we cover that quickly and appropriately. As you mentioned, you know, we've been working with General Logan for several years, and he's a big advocate. We think we have an appreciation of the challenges and opportunities that Hawaii has, and that's why it's critical with the plan that they're currently reviewing that they provide the feedback to us to make sure that we've captured that and that the state is very comfortable with our approach.

Senator SCHATZ. I think that's a good answer. It's an adequate answer. But let me give you a couple of things I want you to just take back and make sure it's all covered in your discussions with our team in Hawaii. First of all, I think one of the big differences is that they want coverage over water in addition to land.

Mr. POTH. Yes.

Senator SCHATZ. That is a technical matter that you've got to address. The second issue—and this may seem small, but it's not. To the extent that you're doing something that is truly nationwide, you have to think about the sort of business operation of doing conference calls and the fact that there's a 6-hour time difference, so that when you do a 9 a.m. East Coast conference call, there is not just an inconvenience, but a—let me say it this way. It demonstrates an East Coast culture, and that's not trivial to us. We do it. We get up at 2 o'clock and do the conference calls.

But to understand this as a nationwide network and to understand that each state is different is also to understand that we all live in different parts of the planet, and I'd just ask you to try to accommodate that. I understand we're not the middle of the time zones, but there could be some accommodation that I'm quite sure a lot of the team in Hawaii and their families would appreciate, if you could make an accommodation in that way.

Mr. Sambar and Mr. Poth, I know that there have been a lot of questions around covering rural areas, and I won't go over that again except to ask you to recommit or to reaffirm your commitment to making rural coverage a priority, and that includes some pretty interesting topography in Hawaii, and the recognition that, as we say, we're not separated by ocean, we are connected by ocean.

Mr. Poth.

Mr. POTH. Absolutely. You have our commitment that that's an important focus, and I appreciate your other note. I think that's a fair criticism, and we will certainly adjust that to make sure that our communications with all 56 states and territories are a little more accommodating.

Senator SCHATZ. Thank you.

Mr. Sambar.

Mr. SAMBAR. I agree with what Mr. Poth said. You're our customer, not the other way around, so we should be accommodating you. So we apologize for that. Second, one unique example that I give for Hawaii is deployables and rural coverage. A state in the middle of the United States—if you put a deployable in the middle of the state, you may have a two to three-hour drive time and be able to reach anywhere in that state.

But in Hawaii, it's different. You can't necessarily put a deployable on a boat and take it to the next island quickly. So we understand, and we'll be putting multiple deployables in Hawaii. We're dealing with a team there to determine how many that number is going to be, but we understand we need multiple deployables in order to meet the needs of Hawaii, specifically.

Senator SCHATZ. Thank you. And this is a technical question, so I don't even know if, necessarily, this is a challenge. But how does AT&T intend to build the network so that Hawaii does not depend on continental United States infrastructure to keep the network operational? In other words, if there's a problem on the mainland in the middle of a natural disaster in the Pacific, are we still required to sort of bounce through some server in Tucson? How does that work?

Mr. SAMBAR. Yes, Senator, I'm familiar with the issue. So what you're referring to is the core node, essentially, in our network. It resides in the continental U.S. for Hawaii's traffic. So Hawaii's traffic does traverse the ocean, come to the core node and back.

Your team has brought this up as an issue. We recognize it as an issue, and we're working with them to try and figure out what the solution to that is going to be, whether that's deployables, as I mentioned earlier, or whether that's putting a full core node in Hawaii, or whether that's some type of a temporary node in Hawaii or a node that can be used in time of crisis. So we're working through those details with the team out there to make sure that

we meet their needs and that they're satisfied with the solution we provide.

Senator SCHATZ. Is that prohibitively expensive, or do you think you can get—

Mr. SAMBAR. There's a spectrum there of expense, so deployables are on one side, and providing a full blown core node on the other side is very expensive. There is a middle ground in there that I think both parties are very close to coming to agreement on that I think will be not prohibitively expensive and will be satisfactory to both parties.

Senator SCHATZ. Thank you. And then what about cybersecurity? It seems to me that if there were a cyber attack on critical infrastructure that they'd be looking for an aperture to shut down this network. How worried are you about that? Is your cybersecurity plan for AT&T sort of the—let me say it another way. Is the FirstNet cybersecurity plan just sort of a subset of what happens at AT&T, or is there a separate enterprise that deals with the possibility of an attack?

Mr. SAMBAR. I appreciate the question. So FirstNet in the RFP and now the contractual obligation that we have is to treat this network very differently than we treat our regular core AT&T network. So we will be building a couple of things that differentiate, or a number of things, I should say.

First of all, the devices themselves need to be screened and ensure that they are secure for first responders. Second, the applications on the devices—first responders won't go to the regular application stores that we all go to to get their applications. They'll go to a FirstNet specific application store, where the applications will be vetted for security and functionality.

Next, the network itself that I referred to earlier as the core network—the traffic resides on the core network. All of the first responder traffic will be on a separate core network. That's at a cost of hundreds of millions of dollars to build one of those completely separate. Right now, we have one that operates all our wireless traffic. We're building a completely separate one with encryption on it, and that's not typically how wireless networks are built. So that will give enhanced security to public safety.

And then the last piece that I would mention is the security operations center. So AT&T currently operates multiple security operations centers around the world. We are building a security operations center specific for this core and this traffic to ensure that it is monitored 24 hours a day, 7 days a week, 365 days a year. So there will be security professionals just looking at first responder traffic on the first responder core network.

So we are going to great lengths to ensure that this network is as secure as possible, because, as you say, this could obviously be a target for attack and we want to make sure that that doesn't happen.

Senator SCHATZ. Mr. Poth, do you have anything to add?

Mr. POTH. No. Absolutely, as he mentioned, with the robust nature of what they're doing. Also, at FirstNet, with our cybersecurity experts—and we're also drawing from experts from DHS, NIST, and DOJ—we're making sure we're going to do periodic inspections and audits to make sure that it's meeting all the needs, because,

as you point out, this is a very high-profile network and is highly susceptible for people wanting to try to attack it.

Senator SCHATZ. Thank you.

Senator WICKER. Mr. Sambar, what about volunteer emergency service providers? I'm told that they will want to migrate their personal devices onto the public safety network. How is AT&T going to address this?

Mr. SAMBAR. Yes, Senator. So the vast—as we understand and based on our research and FirstNet's research, the vast majority of firefighters, for example, are not issued devices for their daily use at work, especially volunteer firefighters. Greater than 70 percent of police officers are in the same situation. They are not provided a device. They're using their personal devices.

We are going to make available the FirstNet network to all of those first responders. Regardless of whether you're a volunteer, whether your agency provides you a device, or whether you bring your own personal device, they will have access to the FirstNet network. Once we can verify their credentials and ensure that we have the right people on the network, they will have access to all of those features and benefits, and it will come at a significantly lower price than they're paying today for their personal or commercial service. So it's a tremendous benefit to all first responders.

Senator WICKER. And then on user fees, will they cost the same for all network users, or will they vary by regions, public safety agencies, or states?

Mr. SAMBAR. It's difficult to answer, because there are different use cases, so it depends. If you're a large department, and you want unlimited data, and you have a number of applications that you want pre-installed on the device, and you have mobile device management software, that would be one use case. There may be a rural department that wants to connect body cameras and dashboard video cameras from a police department. It will depend on the use case.

Senator WICKER. So it's use case and not regions and states.

Mr. SAMBAR. That's correct, sir.

Senator WICKER. That would be the variable.

Mr. SAMBAR. That's correct.

Senator WICKER. All right.

Senator Schatz.

[No verbal response.]

Senator WICKER. Gentlemen, thank you very much. Clearly, this is a massive undertaking, and there's much interest on the part of the Congress. But you've been very good to answer our questions.

The hearing record will remain open for two weeks. During this time, senators are asked to submit any questions for the record. Upon receipt, can our witnesses agree that they will submit their written answers within three weeks of receiving those? Can we agree to that?

[Nonverbal response.]

Senator WICKER. OK. May the record reflect that all five witnesses agreed to do that. We do appreciate it very, very much.

The hearing is now concluded with the thanks of the members of the Subcommittee.

[Whereupon, at 11:40 a.m., the hearing was adjourned.]

A P P E N D I X

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN THUNE TO CHRIS SAMBAR

Question 1. Mr. Sambar, the American people have entrusted FirstNet and AT&T with a tremendous resource—20 MHz of 700 MHz spectrum. How does AT&T intend to make sure that first responders serving America's rural communities can have access to state-of-the-art communications technology at affordable prices?

Answer. Rural coverage has always been a priority in the development of the state plans. FirstNet and AT&T worked hard to cover more than 99 percent of the population and, by combining our wireless LTE network with rural telecommunications networks, deployables and additional satellite technology, we will also cover more than 99 percent of the U.S. geography. We have published FirstNet contract rates that are very attractive and intended to ensure that all first responders, regardless of size or location, can take advantage of these services, customized for their needs. The contract between AT&T and FirstNet also has device connection targets in every state, which will help ensure that no area is left behind.

Question 2. Mr. Sambar, how does AT&T define rural areas? At the hearing you often mentioned using "deployables" to provide coverage in rural areas. What other means will AT&T use to provide coverage in rural areas?

Answer. FirstNet defines "rural" for purposes of the Public Safety Spectrum Act to have the same meaning as "rural area" in section 601(b)(3) of the Rural Electrification Act of 1936, as amended. FirstNet and AT&T worked hard to cover more than 99 percent of the population and will have the ability to also cover more than 99 percent of the U.S. geography with AT&T's commercial LTE network, agreements with rural telecommunications providers, deployables and satellite technologies.

Question 3. Mr. Sambar, in what ways will FirstNet bring dynamic new technology to the network over the duration of the contract? How can AT&T encourage startups and entrepreneurs to bring the latest technology and greatest technology to our first responders?

Answer. FirstNet and AT&T will develop an ecosystem that will help modernize public safety communications. This includes: (i) an application development program that fosters interoperability and facilitates access to new public safety applications—all of which are reviewed via the FirstNet certification process; (ii) a dedicated public safety home page that provides wireless network status, local command and control for wireless accounts, devices, applications, and user groups; (iii) a robust and highly secure device ecosystem for FirstNet; and (v) a contractually mandated roadmap to deliver a wide range of next-generation public safety features, including mission critical push-to-talk, voice, data, messaging, and video, broadcast technology, and z-Axis location based services. Potential enhanced capabilities, such as wearable sensors and cameras for police and firefighters, can deliver near real-time images of events, such as fires, floods or crimes. Imagine camera equipped drones and robots delivering these images. AT&T—which stands at the forefront of IoT advances and Smart Cities technology—will work to identify and encourage cutting-edge technologies that benefit first responders.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO CHRIS SAMBAR

Question 1. Mr. Sambar, what percentage of rural areas across the continental United States will FirstNet and AT&T cover using deployable devices? What percentage of rural areas across the continental United States will FirstNet and AT&T cover rural network providers?

Answer. AT&T's National Disaster Recovery (NDR) team combines network infrastructure and support trailers, recovery engineering software applications and a re-

sponse team with more than 130,000 working hours on field exercise and deployments over the last two decades. We will increase our fleet with 72 new deployables to support FirstNet. With these combined assets, we will stand ready to deploy to all rural areas of the country.

Regarding AT&T's work with rural network providers, FirstNet set a benchmark whereby AT&T uses rural telecommunications providers to provide at least 15 percent of its rural coverage. AT&T is working to meet or exceed that benchmark. With AT&T's wireless LTE network, our agreements with rural telecommunications providers, deployables and additional satellite technology, we will cover over 99 percent of both the population and U.S. geography.

Question 2. Mr. Sambar, during the July 20 hearing, it was suggested that "deployables" may be the primary answer to rural coverage for FirstNet. What is the specific commitment for FirstNet and AT&T to provide continuous coverage for public safety in rural areas? Please explain.

Answer. To be clear, even without deployables, we will cover over 99 percent of the population using our commercial LTE network combined with Band Class 14 and agreements with other rural telecommunications providers to augment network capacity. We would therefore consider this overall coverage as the "primary" means to provide rural coverage to first responders. That said, to reach remote rural areas, deployables, such as Cells on Wheels or Cells on Light Trucks, will provide an important enhancement to the coverage reach for FirstNet users. As noted in our response to Question 1, by combining our wireless LTE network, our agreements with the rural telecommunications providers, deployables and additional satellite technology, we will have the ability to cover over 99 percent of the U.S. geography.

Question 3. Mr. Sambar, you testified that AT&T will provide "primary users" with preemption on the FirstNet network. Who is considered a "primary user" and are medical providers considered primary users?

Answer. FirstNet has defined "primary users" as police, fire and rescue personnel, as well as emergency management and 911 personnel. Medical providers that fall into those categories will be primary users. Medical providers who do not fall into those categories would be extended primary users. During an event, medical providers who are extended primary users can be "uplifted" to primary user status by the local incident commander for a designated period. Once uplifted, they will have priority and preemption until that time ends.

Question 4. Mr. Sambar, please provide additional information on the subscription pricing plans for first responders' use of the FirstNet network. Have AT&T and FirstNet set pricing or user fees for the 25-year life of the contract? Does AT&T have discretion to change user fees for access to the core and for first responder usage over the 25-year contract period?

Answer. Our FirstNet offerings will be unlike anything currently in the market. Together with FirstNet, we are working to deliver to first responders effective and competitively priced services which first responders demand. While FirstNet and AT&T have not set user fees for the 25-year life of the contract, FirstNet structured this private/public partnership such that AT&T must provide an effective and competitively priced service to first responders. We have an obligation to FirstNet to obtain a significant number of device connections in every state. If we do not provide this unique service at an affordable price point, first responders will not subscribe, and we will face significant financial penalties. We are committed to deliver this unique service at price points that (initially and over time) work for all first responders. We will work with each public safety entity to provide the combination of pricing, features and overall value necessary to earn their business.

Question 5. Mr. Sambar, can you provide the Committee AT&T's plan for the buildout of Band Class 14, state-by-state, showing how much of each state's land mass will be covered by a dedicated first responder radio access network in Band Class 14 and when?

Answer. Each state or territory has received this information along with its state plan and may access it, on a confidential basis, via the state portal. The detailed FirstNet buildout and coverage information provided to the states is confidential, for both security and competitive reasons. For network security purposes, it is important that AT&T's network and the FirstNet build plans are kept confidential and not publicly available to those seeking to harm the network, which will be relied upon by our first responders in times of emergency. We would be happy to further discuss this question with your office in a private setting.

Of course, focusing on Band Class 14 would not capture AT&T's commitment to open all of its commercial spectrum bands to FirstNet. Because of this commitment, FirstNet users will have immediate access to AT&T's nationwide, commercial LTE network and will benefit tremendously from prioritization. Primary users also will

benefit from preemption, which AT&T anticipates will be available later this year. AT&T will use Band Class 14 to supplement coverage where needed and will thus increase overall coverage.

That said, we expect to deploy a significant percentage of Band Class 14 over the next five years and the vast majority over the 25-year length of our contract with FirstNet. Moreover, if AT&T is tasked to build all 56 RANS in the states and territories, we estimate that by combining our commercial LTE network with rural telecommunications networks, deployables and additional satellite technology, we will cover over 99 percent of both the U.S. population and its geography.

Question 6. Mr. Sambar, if local public safety agencies now have cellular service from a provider other than AT&T, can they keep that provider or must they drop their current provider and replace it with AT&T in order to access a radio access network built by AT&T?

Answer. Agencies will need to subscribe to AT&T FirstNet service to have access to AT&T's FirstNet network services, which are supported by the nationwide core that we are building for FirstNet traffic, as well as the radio access networks that we will build in each of the 56 states and territories that opt-in.

Question 7. Mr. Sambar, AT&T and FirstNet have entered into a 25-year agreement, and explained that states should rely on FirstNet to protect the states' interests. How many former FirstNet employees are now employed by, or consult for, AT&T? How many SPOC's (single point of contact) or other state employees involved in this process are now employed by, or consult for, AT&T? Do you believe that this is a conflict of interest?

Answer. AT&T has not hired any former employees of the First Responder Network Authority. In July of this year, we hired Harlin McEwen as a consultant. Mr. McEwen previously served as chairman of FirstNet's Public Safety Advisory Committee (PSAC). He served in that role as a volunteer. Mr. McEwen's position on the PSAC did not involve FirstNet's vendor selection process and his work for AT&T does not violate any applicable conflicts of interest rules. AT&T continues to bolster its public safety expertise. We have hired one former state point of contact and another individual that previously worked in a state office of Homeland Security. These individuals were unemployed at the time of their hiring by AT&T. AT&T remains committed to identifying and managing any potential or actual conflicts of interest that may arise with any of the employees on AT&T's FirstNet team.

Question 8. Mr. Sambar, do you believe that employment at AT&T be prohibited, or delayed, for former FirstNet employees? Should employment at FirstNet be prohibited, or delayed, for former state employees?

Answer. AT&T will comply with all applicable Federal or state statutes or rules, as well as any obligations in the contract between FirstNet and AT&T, concerning employment of former FirstNet or state employees. There are safeguards in place to address organizational conflicts of interest and we intend to abide by them.

Question 9. Mr. Sambar, does AT&T have the ability to terminate its contractual agreement with FirstNet? If yes, under what circumstances can AT&T terminate its contractual agreement with FirstNet?

Answer. No.

Question 10. Mr. Sambar, AT&T says it expects to spend \$40 billion over the life of the contract. Please breakdown these expected costs between cash and in-kind expenses.

Answer. AT&T expects to spend about \$40 billion over the life of the contract on items such as buildup of the public safety network, operation of that network, equipment, marketing, sales, support, etc. There are many variables that affect how and where that spend will occur over the next 25 years, including completion of the opt-in process. AT&T is committed to bringing to bear all the necessary resources to successfully deliver the FirstNet services to first responders, just as Congress envisioned it.

Question 11. Mr. Sambar, how much will AT&T spend in cash during the contract's first five years?

Answer. Again, AT&T expects to spend about \$40 billion over the life of the contract on items such as buildup of the public safety network, operation of that network, equipment, marketing, sales, support, etc. There are many variables that affect how and where that spend will occur over the next 5 years, including completion of the opt-in process. AT&T is committed to bringing to bear all the necessary resources to successfully deliver the FirstNet services to first responders, just as Congress envisioned it.

Question 12. Mr. Sambar, how much of AT&T's \$40 billion investment is projected to come from payments from states for using the core or from first responders for using the network?

Answer. There are no payments from opt-in states to AT&T for using the FirstNet core. First responders pay service fees to AT&T for the service and we have established rates that are aggressively priced. AT&T's commitment to spend \$40 billion over the life of the contract is not tied to any source of FirstNet-related revenue.

Question 13. Mr. Sambar, what value does AT&T believe the Band Class 14 spectrum would be worth in a private market transaction?

Answer. I have not done an analysis to answer your question. I am focused on delivering on our FirstNet commitments.

Question 14. Mr. Sambar, AT&T has said, "If we build it, the states will come." What happens if they do not come? How many states (and what percentage of the population) could opt-out before FirstNet is no longer viable for AT&T?

Answer. Right now, we are focused on getting as many states and territories as possible to opt in. AT&T is committed to demonstrating to states the value of the its solution and the resources that AT&T will use to deliver a superior solution for first responders. We have a great value proposition for the states and are looking forward to their decisions. Our approach to FirstNet is designed for states and for first responders, alleviating long-term risks associated with funding, building and maintaining a network for 25 years that interoperates with the FirstNet network. FirstNet and AT&T will work with states to help them get the network they are looking for—and which Congress envisioned—all without the financial and operational burdens of going it alone. We have had great success so far, with 19 states already announcing their opt in as of August 31, 2017. We will continue these efforts.

Question 15. Mr. Sambar, do wireless signals propagate the same way on all AT&T's bands? How might Band Class 14 differ? Are there specific qualities regarding Band Class 14 that make it optimal for a First Responders' network? Please explain.

Answer. AT&T will rely on its other spectrum bands, including its near-nationwide 700 MHz spectrum, cellular (850 MHz), PCS, AWS-1 and AWS-3 and WCS to optimize coverage, capacity and FirstNet users' experience. Different spectrum bands have different characteristics that can make them relatively more or less optimal for a particular provider in a particular location. For example, spectrum below 1 GHz, such as Band Class 14 spectrum, may have some advantages for network deployment over long distances given its propagation characteristics. At the same time, those same characteristics can cause greater inter-cell interference as cell size decreases. For this reason, higher band spectrum can be superior to low band spectrum for network densification. First responders will benefit from AT&T's plan to use a variety of bands to best meet their needs, not just Band Class 14. All of AT&T's spectrum bands are suitable to provide mobile wireless services, and all of them have the propagation characteristics suitable for providing such service. Band Class 14 is no different in that respect.

Question 16. Mr. Sambar, during the hearing, AT&T expressed its desire to build-out Band Class 14 "when capacity calls for it." Does that mean only more populated areas will have Band Class 14 built out? Please explain.

Answer. No. We plan to deploy Band Class 14 nationwide, on over 40,000 sites, including in many rural areas. In some of these rural areas, AT&T's existing spectrum is at or near capacity. For example, when North Dakota experienced its natural gas boom, our network was pushed to capacity in rural areas of the state. But AT&T also will deploy Band Class 14 on new sites to cover rural areas that are today unserved or underserved, in addition to deploying Band Class 14 on most of our existing sites. As we noted in response to Question 15, AT&T also will rely on its other spectrum bands, including 700 MHz, cellular (850 MHz), PCS, AWS-1 and AWS-3 and WCS to optimize coverage, capacity and FirstNet users' experience.

Question 17. Mr. Sambar, it was stated by AT&T and FirstNet that location based technology to solve the Z-axis (vertical) challenge would be delivered by 2020. This is a top priority for firefighters. Please provide a specific timelines for IOC and FOC of this capability.

Answer. AT&T has contractually committed to delivering z-Axis enhanced location services as part of the FirstNet network prior to FOC. Location accuracy enhancements, including z-axis, will follow commercial availability. We are evaluating solutions as they become available to determine if they meet the rigorous needs of first responders. To date, they do not.

Question 18. Mr. Sambar, FirstNet and AT&T have indicated that their “pricing” will be competitive. With the potential to monetize Band 14 through shared usage, do you expect revenue to be sufficient to offer free services to first responders?

Answer. We have published contract rates in the state plans that are attractive for public safety entities. And we intend to aggressively price our services for first responders. If we do not provide this unique service at an affordable price point, first responders will not subscribe and we will face significant financial penalties under our contract with FirstNet—which includes device connection commitments in every state.

While there are benefits to AT&T in the form of spectrum, those benefits come with significant and important obligations that we must and will fulfill over the next 25 years—to the benefit of public safety. The spectrum is provided for the primary purpose of building and supporting the FirstNet network—again, to the benefit of the public safety community.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROY BLUNT TO
CHRIS SAMBAR

Question 1. What percentage of Missouri will be covered by Band 14 when AT&T’s FirstNet build-out is complete?

Answer. Each state or territory has received this information along with its state plan and may access it, on a confidential basis, via the state portal. The detailed FirstNet buildout and coverage information provided to the states is confidential, for both security and competitive reasons. For network security purposes, it is important that AT&T’s network and the FirstNet build plans are kept confidential and not publicly available to those seeking to harm the network, which will be used by first responders in times of emergency. We would be happy to further discuss this question with your office in a private setting.

Of course, focusing on Band Class 14 would not capture AT&T’s commitment to open all of its commercial LTE spectrum bands to FirstNet. Because of this commitment, FirstNet users will have immediate access to AT&T’s nationwide, commercial LTE network and will benefit tremendously from prioritization. Primary users also will benefit from preemption, which AT&T anticipates will be available later this year. AT&T will use Band Class 14 to supplement coverage where needed and will thus increase overall coverage.

That said, we expect to deploy a significant percent of Band 14 over the next five years and the vast majority over the 25-year length of our contract with FirstNet. Moreover, if AT&T is tasked to build all 5G RANs in the states and territories, we estimate that by combining our wireless LTE network with rural telecommunications networks, deployables and additional satellite technology, we will cover over 99 percent of both the U.S. population and its geography.

Question 2. To the extent that AT&T’s final state plan will not include Band 14 coverage for parts of rural Missouri, does AT&T think that its non-Band 14 networks are sufficient to meet the needs of first responders in rural Missouri?

Answer. Absolutely. First responders will benefit from AT&T’s plan to use a variety of bands to best meet their needs, not just Band Class 14. In addition to Band 14, AT&T will rely on its other spectrum bands, including its near-nationwide 700 MHz spectrum, cellular (850 MHz), PCS, AWS-1 and AWS-3 and WCS to optimize coverage, capacity and FirstNet users’ experience. FirstNet and AT&T worked very closely with states on the state plans to address each states’ coverage concerns and priorities—and we will continue to do so as these plans are finalized.

Question 3. In light of the value of the bandwidth given to AT&T through FirstNet, what is AT&T doing to ensure that its FirstNet offerings are affordable, particularly to smaller law enforcement departments and volunteer emergency services personnel, who are often the first to respond to natural disasters?

Answer. We have published contract rates in the state plans that are attractive for public safety entities. And we intend to aggressively price our services for first responders, no matter their size or location. If we do not provide this unique service at an affordable price point, first responders will not subscribe and we will face significant financial penalties under our contract with FirstNet—which includes device connection commitments in every state. We have every incentive to ensure that no area is left behind.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
CHRIS SAMBAR**

Question 1. States have returned State and Local Implementation Grant Program (SLIGP) funding based upon a commitment from the National Telecommunications and Information Administration that SLIGP funding would be distributed in 2018 following an extension of that grant program. What actions is FirstNet taking to ensure that SLIGP funding is provided to states in 2018?

Answer. AT&T refers to FirstNet's response.

Question 2. Rural coverage is a high priority. Will AT&T and FirstNet consult with states on the placement of towers and antennas impacting rural coverage?

Answer. Yes, we have and will continue to consult with states on facility placement to increase rural coverage. We agree that rural coverage is a priority for FirstNet and first responders—whether urban, suburban, or rural. AT&T is committed to continued consultation with the states to meet this goal. The statute itself required FirstNet to consult with states regarding distribution and expenditure of amounts used on the placement of towers. The state plans, which have been delivered via the state plan portal to the states, included this information. States can enter comments or can submit questions on any topic, including impact to rural coverage. FirstNet and AT&T will continue to consult with the states in this regard going forward.

Question 3. It is hoped and desired that AT&T and FirstNet will thoroughly explore state tower assets for co-location of multi-band transmitters to expand beyond the initial plan's current coverage proposal. What actions will AT&T and FirstNet take to consider opportunities to leverage state tower assets?

Answer. AT&T is committed to working with states to provide superior coverage for first responders. In engaging with states, we will consider state infrastructure for use should it meet network deployment needs and requirements.

Question 4. As volunteer first responders are a large percentage of the public safety community, when will AT&T and FirstNet have the individual sign-up process for public safety volunteers developed and when will it be shared with the states?

Answer. AT&T is working on developing the subscriber-paid (or volunteer) offer and anticipates that details will be available at the end of this year.

Question 5. "Local Control" has been described as a breakthrough capability for public safety communications and a FirstNet feature. How will extended primary users such as volunteer firefighters be "uplifted" as primary users when required? How will multiple jurisdictions converging upon a single event be prioritized for access to broadband capacity?

Answer. During an emergency event, extended primary users can be "uplifted" by the local incident commander to primary user status for a designated period. Once uplifted, they will have priority and preemption until this time ends. When multiple jurisdictions converge on a single event, public safety will use the incident management tool to uplift select extended primary users from multiple jurisdictions to primary user status to provide critical first responders with priority and preemption for a specified time.

Question 6. The Committee intends to remain engaged with state governments on FirstNet matters, maintaining awareness of states' experiences with FirstNet and AT&T as the construction of the Nationwide Public Safety Dedicated Broadband Network occurs. What actions will AT&T and FirstNet be taking to remain engaged with state governments?

Answer. The law that established FirstNet requires it to consult with Federal, State, tribal, and local public safety entities to ensure that the FirstNet network is designed to meet the needs of public safety across the country. AT&T and FirstNet are dedicated to continued consultation with the states as we begin to deploy the FirstNet network and offer first responder services over that network. In other words, we intend to do what we have been doing, *i.e.*, sharing information, responding to questions, and holding group and one-on-one meetings with stakeholders. We expect this consultation will continue to be a collaborative process, involving key stakeholders and leadership from each state and territory, and will incorporate enhancements and improvements as we move forward.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO
CHRIS SAMBAR**

Question 1. Rural areas throughout our country and in my home state of Michigan, particularly Northern Michigan and the Upper Peninsula, face major challenges when it comes to broadband infrastructure and access. In these places, it is also critical that first responders can communicate immediately and without interruption, especially since public safety officers have to cover large areas and travel long distances. I know that as Michigan reviews the draft state deployment plan AT&T and FirstNet provided in June 2017, one of its biggest concerns is maintaining adequate and cost-effective public safety communications in rural areas. In developing your draft state deployment plans, what measures did you take to specifically examine the needs of rural public safety agencies and ensure that sufficient network capacity would be available to them? How are you planning to further engage with rural public safety agencies as you draft final plans? Will you be able to provide them with information about how much, and what type, of coverage they would have?

Answer. First, I am honored to report that since the July 20th hearing, Michigan has announced its decision to “opt in” to FirstNet. I and others from AT&T and FirstNet have had multiple meetings with Michigan officials to answer their questions, many of which focused on coverage for rural first responders. I am pleased that these efforts met Michigan’s rural coverage needs. FirstNet and AT&T remain committed to working with Michigan and all opt-in states regarding their ongoing needs.

I can assure you that rural coverage has always been a priority in the development of the state plans. FirstNet and AT&T worked hard to cover more than 99 percent of the population and will also have the ability to cover more than 99 percent of the U.S. geography with AT&T’s commercial LTE network, our agreements with rural telecommunications providers, deployables and satellite connectivity. The state plans provide states specific details as to the amount and types of coverage, by both population and geography, as well as coverage maps with layers demonstrating the five-phase roll out of rural coverage, as mandated by Congress. The coverage maps also show when and which areas of the state will be covered and by what technology. We are also updating these maps and layers based on discussions with states. AT&T is committed to working with states to provide the information they need to make informed opt-in/opt-out decisions. FirstNet and AT&T worked very closely with states on the state plans and to address each state’s concerns and priorities. We will continue to do so.

I am also proud that AT&T will support FirstNet with its world-class National Disaster Recovery (NDR) team, which combines network infrastructure, trailers, recovery engineering software applications and a response team with both full and volunteer members from AT&T. We will increase this fleet with 72 new deployables to support FirstNet. These assets can be deployed to rural and remote areas (such as in the recent case of the California wildfires and Hurricane Harvey) to support first responders wherever they may be called into service.

Question 2. Cybersecurity is one of the foremost concerns of public safety networks, and I know that AT&T and FirstNet are working to ensure the highest possible cybersecurity standards while also keeping the network cost-effective for public safety agencies. Can you describe further how you are balancing the demands of adequate cybersecurity with cost effectiveness, and how you have involved stakeholders in this process? How have you and NTIA coordinated with Federal agencies on cybersecurity best practices, given that this nationwide network will be a key homeland security asset?

Answer. We take the threat of cyber-attacks seriously and we plan to provide first responders a reliable, highly-secure network, encrypted at its core. Security is embedded in everything we do and managing a highly-secure network is not new to us. FirstNet will benefit from AT&T’s expertise in detecting and addressing cyber threats, at no additional charge. We secure more connections than any carrier in North America. AT&T has 8 world-class Global Security Operations Centers, where our security experts analyze the traffic on our network 24/7/365 to understand and identify emerging threats. With more than 168 petabytes of data crossing our network every day, our experts have unique insight into the threat landscape that helps them detect new threats, often before they become a problem. We will have one such center dedicated to FirstNet. In terms of “best practices,” AT&T’s cybersecurity program has been benchmarked against the NIST Cybersecurity Framework. We have developed a multi-layered approach to help secure devices and the network. Finally, our use of software-defined networks (SDN) also allows us to

virtualize our security functions, letting us automatically update security instead of relying on manual updates.

AT&T refers to FirstNet's response on coordination with NTIA and other Federal agencies on cybersecurity best practices.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CATHERINE CORTEZ MASTO
TO CHRIS SAMBAR

Question 1. Mr. Sambar, as you know, on March 8, 2017 AT&T's 911 service went down for about five hours, resulting in about 12,000 unique callers from several states not being able to reach 911, including in Las Vegas. During the outage, many emergency calls were dropped. Can you confirm what caused that issue? What you've done to remedy it? And can you provide us reliable assurance that kind of situation won't happen again, or with a future national network?

Answer. We take our support of public safety communications seriously and take this opportunity to again apologize to every community affected by that outage. We've done an extensive evaluation and concluded the problem was caused by a system configuration change affecting connectivity between a 911 vendor and our network. The FCC conducted an independent investigation and described the root causes in their report.¹ We've taken steps to prevent this from happening again. The FCC described our major preventative steps in its report and concluded that the voluntary changes made by AT&T will help prevent a recurrence of a similar outage and may help with future outage detection and remediation.²

When an outage happens, what is most important is the speed of recovery in response to an incident and, as you note, making changes to prevent similar outages in the future. Our response to this outage and the remedial action we took are illustrative of our approach to continuously improve our capabilities based on key learnings.

Question 2. While I appreciate the principle that FirstNet will be financially sustainable, what assurances do we have that the assessment of fees on public safety will be reasonable and continue to be reasonable, considering some of the budgets state and local communities are currently wrestling with? The same goes for the potential of usage of the spectrum to expand or improve rural wireless services. Can we be assured that there won't be continued high costs for our rural constituents who may appreciate the access, but not the cost of this service?

Answer. Yes. We have published FirstNet contract rates that are very attractive for entities of all sizes and that are intended to ensure that all first responders, regardless of size or location, can take advantage of these services customized for their needs. The contract between AT&T and FirstNet also has device connection targets in every state, which will help ensure that no one is left behind.

Your second question recognizes that the FirstNet buildout will benefit customers in rural America, as our coverage expands. When not needed by public safety, AT&T will use surplus capacity to serve commercial traffic, which will improve service and coverage for all our wireless users.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN THUNE TO
MICHAEL POTH

Question. Mr. Poth, how do you intend to work with small, rural providers to ensure efficient and effective network coverage in rural and remote areas?

Answer. FirstNet recognizes the importance of having reliable network coverage in rural and remote areas, and takes very seriously the rural coverage requirements under its enabling legislation, including substantial rural milestones as part of each phase of network deployment. FirstNet's commitment to rural implementation was reflected in FirstNet's request for proposals (RFP). To ensure proposals included small and rural partnerships, the FirstNet RFP stated "the Offeror's solution must demonstrate intent to exercise rural telecommunications provider partnerships for at least 15 percent of the total persistent rural coverage nationwide." AT&T's winning proposal met the rural partnership threshold, and they are partnering with small and rural providers across the country. Additionally, AT&T maintains the ability to expand and continue to partner with small and rural providers to extend coverage to rural parts of the country through the life of the 25-year contract.

¹ <https://www.fcc.gov/document/final-report-march-8-2017-att-mobility-volte-911-outage> at ¶¶ 10–14.

² *Id.* at ¶25–29.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER F. WICKER TO
MICHAEL POTHE**

Question 1. Mr. Poth, what percentage of rural areas across the continental United States will FirstNet and AT&T cover using deployable devices? What percentage of rural areas across the continental United States will FirstNet and AT&T cover rural network providers?

Answer. FirstNet's wireless coverage will reach more than 99 percent of the rural population and, by combining their wireless network with rural telecommunications networks, deployables and additional satellite technology, AT&T will cover nearly 100 percent of the U.S. geography. AT&T is taking advantage of existing contractual relationships with more than 60 rural telecommunication providers with wireless infrastructure and fiber backhaul to deliver the coverage specified by FirstNet. Over the 25 year contract, FirstNet and AT&T will look to continually expand that coverage footprint. Additionally, AT&T will be using deployable units, such as cells on wheels (COWs) and Cells on Light Trucks (COLTs), to add coverage in remote areas across the country in times of emergency.

Question 2. Mr. Poth, during the July 20 hearing, it was suggested that "deployables" may be the primary answer to rural coverage for FirstNet, but may only be available in the case of a major incident, not for the day-to-day needs of public safety in rural areas. What is the specific commitment for FirstNet and AT&T to provide continuous coverage for public safety in rural areas? Please explain.

Answer. FirstNet's deployable strategy is an important part of providing service where terrestrial service may be unavailable, whether it be a lack of coverage or network restoration. Deployables will not be the only solution in delivering rural coverage. FirstNet and AT&T will work with public safety to identify rural areas that are in need of permanent ("continuous") coverage to determine how those needs may best be met as part of our ongoing network expansion process.

Question 3. Mr. Poth, if the contractual relationship is between AT&T and FirstNet and not between AT&T and the states, how can governors (and their successors for the next 25 years) ensure that the commitments made in the FirstNet and AT&T state plan are enforced?

Answer. While the contractual relationship is between AT&T and FirstNet, FirstNet has and will continue to ensure that there are robust oversight mechanisms to ensure AT&T executes on the state plans as they have been presented.

Strict internal and external oversight of the AT&T and FirstNet partnership are and will continue to be critical to FirstNet's success. AT&T and FirstNet stand by our commitment to the states as we have presented in the state plans across the country. As states opt-in to the AT&T and FirstNet solution, the partnership is committed to executing on that plan, and our reputation stands on it.

The public safety communications market itself also drives the need for AT&T and FirstNet to execute. The State and local public safety users have the ultimate market-driven tool to ensure their needs are being met: the ability to walk away and switch to another service. FirstNet intends to work directly with state and local public safety entities to meet their needs of expanded coverage and capacity, feature and device upgrades, etc. as they arise. In order to sustain the network, FirstNet and its partner must listen to and adapt to public safety's changing situational awareness and operational needs over the next 25+ years.

Additionally, when the National Public Safety Broadband Network (NPSBN) contract task order that will initiate the buildout of the state radio access networks (RANs) is executed, the task order will contain quality assurance surveillance items that will allow FirstNet to track key performance indicators (KPIs). These KPIs will measure and monitor the performance of the NPSBN contractor throughout the life of the contract. Along with the acceptance criteria of key state RAN deliverables and built in contract disincentives (if the contractor does not perform), these measures will give the government and the states the assurance that the NPSBN contractor is performing the due diligence required to maximize cost efficiency and safe network access; and ensure overall program success. Moreover, both programmatic and contractual processes have been put in place to assist in the monitoring and oversight required, including but not limited to a FirstNet network governance model, contract administration plan, change and configuration management processes, and a FirstNet network Concept of Operations plan.

Question 4. Mr. Poth, please provide additional information on the subscription pricing plans for first responders' use of the FirstNet network. Have AT&T and FirstNet set pricing or user fees for the 25-year life of the contract? Does AT&T

have discretion to change user fees for access to the core and for first responder usage over the 25-year contract period?

Answer. AT&T and FirstNet have not set user fees for the 25-year life of the contract. FirstNet/AT&T service rates will be competitively priced with the current public safety communications marketplace. The rates that AT&T charges for the FirstNet service will be governed by contracts between the company and its public safety customers and agencies. These contracts will stipulate how much AT&T can charge throughout the contract term. In addition, such contracts do not include termination liability, so a customer or agency could terminate its relationship with AT&T and FirstNet at any time.

Finally, the agreement between AT&T and the FirstNet Authority requires AT&T to meet ongoing targets to incentivize public safety adoption of the service. There are severe financial penalties for failing to meet such targets. Therefore, this will act as another mechanism to keep AT&T's prices competitive.

Any fees for access to and use of the FirstNet core network by an opt-out state will be included in the Spectrum Manager Lease Agreement (SMLA) between FirstNet and such opt-out state.

Question 5. Mr. Poth, is the state-by-state build-out plan for Band Class 14 included in the AT&T and FirstNet contract? What are the penalties if AT&T does not buildout the Band Class 14 network targets on time?

Answer. The NPSBN contract scope does include the state-by-state radio access network (RAN) build-out of Band 14. Most of that work will be accomplished through a future NPSBN contract task order (State RAN).

The NPSBN contract contains very specific consequences if AT&T fails to meet its obligations (including delayed payments and penalties). The specific details of the various contractual penalties are considered source selection sensitive and cannot be disclosed.

Question 6. Mr. Poth, the term "Public Safety Grade" was discussed at the hearing.

- a. Are you familiar with that term? If so, please explain what it means. If not, should Congress help define this?
- b. Will FirstNet and AT&T use the National Public Safety Telecommunications Council's standards for the public safety network?
- c. Did the FirstNet RFP bind the winning vendor to building a network to National Public Safety Telecommunications Council standards?
- d. Are public safety grade standards defined in the contract between FirstNet and AT&T and, if not, will they be added to the contract and how? Please explain.

Answer. FirstNet is familiar with the term "Public Safety Grade" and reviewed, among other resources, the National Public Safety Telecommunications Council (NPSTC) report titled "Defining Public Safety Grade Systems and Facilities" published in May 2014. In fact, many topics addressed in the NPSTC report were reflected in FirstNet's request for proposals (RFP), including hardening, resilient connections, backup power, weatherization, and other issues specific to public safety's needs.

Delivering a public safety grade system results in a highly available network for public safety, ensuring the services and tools they need are available when they need it. Given this critical importance, user service availability (99.99 percent) was one of the core 16 objectives that were the foundation of the FirstNet RFP. FirstNet ensured that all the objectives of the RFP were met, including user service availability, which are reflected in the contract between FirstNet and AT&T.

Question 7. Mr. Poth, how many SPOCs (single points of contact) or other state employees involved in this process are now employed by, or consult for, FirstNet? If there are any, do you believe that this is a conflict of interest?

Answer. FirstNet currently employs 10 former Single Points of Contact (SPOCs) or state employees involved in FirstNet efforts and utilizes two such consultants.

Pursuant to applicable Federal law, the employment by FirstNet of former state SPOCs or other state employees involved in FirstNet matters does not, by itself, create a conflict of interest. Under the Standards of Ethical Conduct for Employees of the Executive Branch, a Federal employee may not work on a matter in which a former employer in the past year is a party or represents a party if a reasonable person with knowledge of all facts would question the employee's impartiality in the matter. 5 C.F.R. § 2635.502(a), (b)(iv). Despite this prohibition, the regulations permit an employee's participation if the agency, after weighing several factors enumerated in the regulations, makes a determination that the Government's interest in

the employee's participation outweighs the concern that a reasonable person may question the integrity of agency programs. 5 C.F.R. § 2635.502(d).

Pursuant to this rule, during the one-year period after leaving his or her position as a SPOC or other state government position, a FirstNet employee would be prohibited from working on any matter in which the state is or represents a party. If, however, after considering the factors set forth in the regulations and consulting with the Office of the General Counsel for the Department of Commerce, the employee's supervisor makes a determination that the Government's interest in the former SPOC's/state employee's participation in a matter involving the state outweighs the concern that a reasonable person may question the integrity of agency programs, the employee may be authorized to work on such matters.

Insofar as FirstNet uses former SPOCs or other state employees in a non-employee consulting capacity, such a relationship does not create a conflict of interest for FirstNet under applicable Federal laws. FirstNet is not authorized to comment as to whether such a relationship would create a conflict for the former SPOC or other state government employee in his/her individual capacity as a former state employee.

- a. Mr. Poth, do you believe that employment at AT&T be prohibited, or delayed, for former FirstNet employees?
- b. Should employment at FirstNet be prohibited, or delayed, for former state employees?

Answer a. While there is no authority that imposes a blanket prohibition or delay on the employment with AT&T by former FirstNet employees, applicable Federal law does impose some restrictions on such employment. Specifically, under the Procurement Integrity Act, a former FirstNet employee may not accept compensation from AT&T as an employee, officer, director, or consultant of AT&T within one year after the employee (with regard to the AT&T contract):

- served as the *procuring contracting officer*,
- served as the *source selection authority*,
- served as a member of a *source selection evaluation board*,
- served as the *chief of a financial or technical evaluation team*
- served as the *program manager, deputy program manager, or administrative contracting officer, OR*
- *personally made any decisions on behalf of FirstNet to*
 - award a contract, subcontract, modification, or a task order or delivery order in excess of \$10 million to AT&T;
 - establish overhead or other rates applicable to the AT&T contract;
 - approve a contract payment or claim over \$10 million; or
 - pay or settle a claim over \$10 million.

41 U.S.C. § 2104. Additionally, pursuant to 18 U.S.C. § 207(a)(1), a former FirstNet employee is prohibited from contacting a Federal agency or Federal court on behalf of any other person regarding the AT&T contract if the employee worked on that contract while employed by FirstNet. Further, a former FirstNet employee is barred for two years after leaving Federal service from contacting any Federal agency or Federal court regarding any AT&T contract-related matter that was under his or her supervision during the employee's last year of employment. 18 U.S.C. § 207(a)(1). Finally, any former "senior" FirstNet employee (meaning an employee that earned more than \$161,755 in base pay) is subject to an additional restriction that prohibits the employee from contacting NTIA (including FirstNet) on behalf of anyone else for one year after the termination of his or her Federal employment.

Answer b. While there is no authority that imposes a blanket prohibition or delay on the employment with FirstNet by former state employees, applicable Federal law does impose some restrictions on such employment. Under the Standards of Ethical Conduct for Employees of the Executive Branch, a Federal employee may not work on a matter in which a former employer in the past year is a party or represents a party if a reasonable person with knowledge of all facts would question the employee's impartiality in the matter. 5 C.F.R. § 2635.502(a), (b)(iv). Despite this prohibition, the regulations permit an employee's participation if the agency, after weighing several factors enumerated in the regulations, makes a determination that the Government's interest in the employee's participation outweighs the concern that a reasonable person may question the integrity of agency programs. 5 C.F.R. § 2635.502(d).

Pursuant to this rule, during the one-year period after leaving his or her position with the state, a FirstNet employee would be prohibited from working on any matter in which the state is or represents a party. If, however, after considering the factors set forth in the regulations and consulting with the Office of the General Counsel for the Department of Commerce, the employee's supervisor makes a determination that the Government's interest in the former state employee's participation in a matter involving the state outweighs the concern that a reasonable person may question the integrity of agency programs, the employee may be authorized to work on such matters.

Question 8. Mr. Poth, did the FirstNet RFP require bidders to provide maps of the entire country for signal propagation—the placement of its towers—at a resolution of 30 meters? If so, did AT&T comply? Did any other applicant comply?

Answer. Yes, the FirstNet RFP (Section L, Instructions, Conditions, and Notices to Offerors or Respondents) provided offerors specific instructions associated with NPSBN proposal submission, which included map submission requirements. All offerors complied with the map-related requirements of the RFP.

Question 9. Mr. Poth, does FirstNet have the right to terminate its agreement with AT&T? If so, under what circumstances can FirstNet terminate its contractual agreement with AT&T?

Answer. Yes, FirstNet, through its acquisition service provider, can terminate the NPSBN contract with AT&T under certain circumstances, pursuant to specific contract clauses that are standard for Federal Government contracts.

Question 10. Mr. Poth, aside from its opt-out policies, what other steps will FirstNet take to ensure that public safety users continue to have competitive alternatives for its communications products and services? Does FirstNet anticipate establishing roaming agreements with other wireless carriers, which would enable it to leverage the infrastructure of a broader base of wireless competitors? Does FirstNet intend to provide public safety users with devices that will allow interoperability across multiple broadband networks?

Answer. FirstNet awarded the NPSBN contract that Congress envisioned following a robust, open, and competitive acquisition process. When developing the objectives and other content in the NPSBN RFP, FirstNet ensured that any offeror submitting a proposal would be held to adoption targets that would measure public safety uptake of services and give FirstNet the assurance that the services are being delivered as committed. AT&T must provide a service in accordance with the contract terms and conditions that is compelling, competitively priced and relevant to public safety in order to gain and maintain public safety customers who are under no obligation to purchase services. AT&T will be subject to significant penalties if it fails to meet the adoption targets referenced above and specified in the contract, which, along with the expected continued robust marketplace competition, highly incentivizes AT&T to meet the needs of public safety.

AT&T has established and enabled roaming agreements with all of its roaming partners to service NPSBN users. This will ensure that public safety not only is able to use AT&T's network, but also those of its partners. FirstNet will work with AT&T to ensure that the public safety device portfolio is able to use all of the spectrum available.

Question 11. Mr. Poth, some have expressed concern about securing the FirstNet network from cyberattacks or threats perpetrated by malicious attackers. In your view, should the Department of Homeland Security have a shared role with the Department of Commerce in overseeing the security of the FirstNet network?

Answer. The Middle Class Tax Relief and Job Creation Act of 2012 (Act) required FirstNet to “ensure the safety, security, and resiliency of the network, including requirements for protecting and monitoring the network to protect against cyberattack.” FirstNet has partnered with a number of Federal agencies and departments in order to utilize cybersecurity best practices, including the National Institute of Standards and Technology (NIST) and The Department of Homeland Security (DHS). DHS provided input in the drafting of the NPSBN RFP in the area of cybersecurity and remains a key resource for FirstNet on cybersecurity issues.

The FirstNet Network is unique in the fact it is a public wireless and wireline telecommunications network that is the product of a congressionally mandated public-private partnership between the Federal Government and the private sector. This requires a special and specific skillset in order to navigate the complexities in fulfilling the mission under the Act, which Congress recognized in making FirstNet solely responsible for ensuring the deployment, operation, and maintenance of the NPSBN, including the security of the network. DHS should not have a shared role in overseeing the security of the FirstNet Network—this is clearly FirstNet's responsibility, and FirstNet is committed to continuing the partnership with DHS, seeking

advice and counsel when needed. Cybersecurity is a key objective of the NPSBN contract (Attachment J-10, Cybersecurity), and AT&T is responsible for ensuring all security measures are implemented in accordance with the NPSBN contract. FirstNet has established key performance indicators (KPIs), security deliverables and performance metrics that will give FirstNet the assurance that cybersecurity is being implemented appropriately over the life of the NPSBN contract.

Question 12. Mr. Poth, it was stated by AT&T and FirstNet that Location based technology to solve the Z-axis (vertical) challenge would be delivered by 2020. This is a top priority for firefighters. Please provide a specific timelines for the deployment of this capability.

Answer. The NPSBN contract with AT&T establishes a schedule that obligates AT&T to deliver specific services in accordance with the contractually imposed timelines (in this case, as noted, by 2020).

FirstNet and AT&T are in constant working discussions regarding the implementation of the Z-axis technology, primarily focused on our nations' firefighters. Z-axis (vertical), also known as 3D Geolocation, is an emerging technology with public and private resources being invested to speed innovation and research in the field. FirstNet is working closely with our Federal partner, the Public Safety Communications Research program (PSCR), in accelerating this capability by collaborating with location-based services experts across academia, industry and government.

FirstNet has made this a priority, and will continue to work with AT&T to find an optimum technological solution within reasonable timelines aligned with the technology roadmap.

a. Mr. Poth, how will FirstNet measure and publicly report on meaningful progress towards delivery of this technology?

b. Mr. Poth, if the 2020 deliverable date is at risk, how will FirstNet mitigate that risk and will penalties by imposed?

Answer a. FirstNet in conjunction with our partner, AT&T, plans to continue to report on Z-axis solution progress through forums such as briefings to Congress, public statements from FirstNet's Board meetings, press releases, social media and blog post updates.

The NPSBN contract requires AT&T to provide deliverables and reports on status of services as they are implemented. FirstNet has the responsibility to monitor and oversee AT&T in the delivery of the services.

b. The NPSBN contract holds AT&T to the milestones identified in the timelines established. AT&T must provide a service in accordance with the contract terms and conditions, and if AT&T does not perform, there are penalties identified within the contract (e.g., payments to AT&T withheld).

Question 13. Mr. Poth, First Net and AT&T have indicated that their "pricing" will be competitive. With the potential to monetize Band 14 though shared usage, do you expect revenue to be sufficient to offer free services to first responders?

Answer. We do not expect FirstNet services to be free at this time. FirstNet service will be competitively priced with the market.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. DEB FISCHER TO MICHAEL POTHE

Question. Mr. Poth, as you know, FirstNet is required by the Spectrum Act to look at existing technologies as a way to contain costs and leverage existing assets. I am interested in pilot projects the Department of Homeland Security is conducting with local public television stations. These pilots allow broadcasters to provide critical public safety information to local, state, and national first responders through the use of secure datacasting technology. The over-the-air broadcast signals, which is how the data would flow, already reach 97 percent of U.S. households. It seems like this technology has the potential to save taxpayer dollars and ensure that most Americans can access public safety information. What steps are you taking to incorporate public television's public safety datacasting capabilities as you deploy the FirstNet network?

Answer. FirstNet and AT&T continue to look at new and emerging technologies that could be leveraged to deliver needed services for public safety, including datacasting. FirstNet recognizes that technology evolves rapidly and new opportunities can always arise. Innovation is core to our mission and will remain a focus for the duration of the network.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. RON JOHNSON TO
MICHAEL POTHE**

Question 1. The Middle Class Tax Relief and Job Creation Act of 2012 requires that FirstNet leverage commercial infrastructure including by establishing roaming agreements with wireless service providers. I am happy to see that FirstNet's contract with AT&T leverages that carrier's commercial infrastructure. Does FirstNet anticipate establishing roaming agreements with other wireless carriers which would enable it to leverage the infrastructure of a broader base of wireless competitors?

Answer. Yes. As part of its winning bid to buildout the FirstNet network, AT&T teamed with other small and rural wireless carriers to extend infrastructure beyond its existing footprint. Additionally, AT&T maintains the ability to expand and continue to partner with small and rural providers to extend coverage through roaming agreements and other infrastructure partnerships through the life of the 25-year contract.

Question 2. I have been pleased with FirstNet's progress, particularly the fact that it has remained on or below budget. Will you commit to continue to be a responsible steward of American taxpayers' dollars and not request additional funding from Congress?

Answer. Yes. Congress has FirstNet's commitment to be a responsible steward of American taxpayers' dollars, and we do not intend to request additional Federal funding from Congress. With FirstNet's partnership with AT&T, it is a fully-funded, self-sustaining Network. In return, America's public safety responders will receive specialized services far above and beyond what they have today over a first-class broadband network dedicated to their communications needs. In addition, this innovative public-private partnership will create many new jobs and ensure public safety has a voice in the growth and evolution of the Network.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO
MICHAEL POTHE**

Question 1. States have returned State and Local Implementation Grant Program (SLIGP) funding based upon a commitment from the National Telecommunications and Information Administration that SLIGP funding would be distributed in 2018 following an extension of that grant program. What actions is FirstNet taking to ensure that SLIGP funding is provided to states in 2018?

Answer. Section 6302 of the Middle Class Tax Relief and Job Creation Act of 2012 (the "Act") directs the National Telecommunications and Information Administration (NTIA) to establish and administer the State and Local Implementation Grant Program (SLIGP), including the distribution of and scope of eligible activities for grant funding. FirstNet recommends the Committee contact NTIA on specifics related to SLIGP and any potential extension of the grant program.

Question 2. Rural coverage is a high priority. Will AT&T and FirstNet consult with states on the placement of towers and antennas impacting rural coverage?

Answer. Yes, FirstNet remains dedicated to consulting with states to expand rural coverage, particularly in areas that have been prioritized by states to meet a public safety need. Indeed, states have had the opportunity over the last several months to work with FirstNet and AT&T on the placement of additional tower resources in their respective states to fill in coverage gaps and increase capacity. FirstNet learned early-on in the consultation process that rural coverage is a top priority throughout the country, and FirstNet and AT&T are dedicated to continuing to work with states on the placement of towers and antennas that will reach rural America. Deployable solutions, using COLTS (Cells on Light Trucks) and COWs (Cells on Wheels), will also be utilized in rural areas to enhance coverage.

Question 3. It is hoped and desired that AT&T and FirstNet will thoroughly explore state tower assets for co-location of multi-band transmitters to expand beyond the initial plan's current coverage proposal. What actions will AT&T and FirstNet take to consider opportunities to leverage state tower assets?

Answer. Throughout the consultation process, FirstNet has explored state assets to further expand network coverage. Since AT&T was awarded the nationwide public safety broadband network contract in March 2017, AT&T and FirstNet have continued this work and maintain an open-door policy with the states when it comes to exploring state-owned infrastructure. Per section 6206(c) of the Act, FirstNet is to leverage existing infrastructure "to the maximum extent economically desirable" to drive down costs and expedite network deployment. As such, FirstNet and AT&T will continue to look at all federal, state, local, county, and city assets, as well as

private assets, to determine which are economically desirable for use by the partnership to deploy the FirstNet network.

Question 4. As volunteer first responders are a large percentage of the public safety community, when will AT&T and FirstNet have the individual sign-up process for public safety volunteers developed and when will it be shared with the states?

Answer. FirstNet recognizes the important role that volunteer first responders play in every state. Throughout our consultation with our partners in the state, we heard from numerous volunteer first responders about their challenges. In states that “opt-in” to the AT&T/FirstNet solution, FirstNet is targeting a sign-up process for individual public safety volunteers by the end of 2017. Volunteer departments who will be purchasing service for their volunteer force may purchase immediately upon the governor’s decision to opt in.

Question 5. The Committee intends to remain engaged with state governments on FirstNet matters, maintaining awareness of states’ experiences with FirstNet and AT&T as the construction of the Nationwide Public Safety Dedicated Broadband Network occurs. What actions will AT&T and FirstNet be taking to remain engaged with state governments?

Answer. From the outset, FirstNet initiated robust engagement and outreach with state governments as part of our consultation process. Since the award of the contract, AT&T has joined that outreach effort. FirstNet and AT&T have a robust outreach and consultation team dedicated to working with our state and local partners across the country. FirstNet and AT&T personnel are out in the states routinely meeting face-to-face with state governments through individual meetings and state, regional, and national conferences and events across the country. We have met with all 56 states and territories since the contract was awarded in March. This engagement has been amplified since the release of state plans in June. FirstNet and AT&T look forward to continuing such engagement with the states throughout the remainder of the contract.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO
MICHAEL POTHE**

Question 1. As the Ranking Member of the Federal Spending Oversight Subcommittee, it is important to me that Federal initiatives like FirstNet are run efficiently and provide maximum value to communities. I appreciate that FirstNet has taken a number of steps to establish oversight mechanisms to this end. Two important factors that must be monitored are: (1) the requirement to partner with local telecom providers for buildout and (2) leasing of FirstNet infrastructure and spectrum to commercial users, which will make the program solvent—and also will provide opportunities for local users to build out commercial broadband, particularly in rural areas. What oversight measures have you put in place to ensure that local infrastructure buildout and leasing will maximize cost efficiency and safe network access? What continuing oversight will you do, and how do you plan to partner with states, to ensure that local communities and providers have competitive opportunities to build off this network? What oversight mechanisms will you put in place to ensure that public safety agencies can have ongoing input and recourse for any issues?

What oversight measures have you put in place to ensure that local infrastructure buildout and leasing will maximize cost efficiency and safe network access?

Answer. As of this time, the nationwide public safety broadband network (NPSBN) contract task order that will initiate the buildout of the state radio access networks (RANs) has not been executed. The basis of the task order is dependent upon the states that opt-in to the FirstNet solution, a process that is ongoing. However, once issued, the task order will contain quality assurance surveillance items that will allow FirstNet to track key performance indicators (KPIs) to measure and monitor the performance of the NPSBN contractor throughout the life of the contract. These measures, along with the acceptance criteria of key state RAN deliverables and built in contract disincentives (if the contractor does not perform), will give the government the assurance that the NPSBN contractor is performing the due diligence required to maximize cost efficiency and safe network access; and ensure overall program success. Additionally, both programmatic and contractual processes have been put in place to assist in the monitoring and oversight required, including but not limited to a FirstNet network governance model, contract administration plan, change and configuration management processes, and a FirstNet network Concept of Operations plan.

Question 2. What continuing oversight will you do, and how do you plan to partner with states, to ensure that local communities and providers have competitive opportunities to build off this network?

Answer. FirstNet will continue to engage in the ongoing assessment of how we utilize commercial, state, Federal and tribal infrastructure, which is a key objective of the contract, and intends to implement processes to provide such oversight. FirstNet will continue to engage with states and the public safety community throughout the Nation to ensure that services are being met as promised by the contractor and in accordance with the NPSBN contract. Additionally, both programmatic and contractual processes have been put in place to assist in the monitoring and oversight required such as the use of integrated task/project teams, monthly program reviews, and a robust deliverable acceptance process.

Question 3. What oversight mechanisms will you put in place to ensure that public safety agencies can have ongoing input and recourse for any issues?

Answer. FirstNet's primary mission is to ensure the establishment and continued operation of a network that provides the necessary services to enable public safety agencies to perform their duties. FirstNet will continue to engage with public safety agencies to ensure that they receive the services committed to under the NPSBN contract and serve as the primary point of contact in the event the terms and conditions of the contract are not being met. Additionally, both programmatic and contractual processes have been put in place to assist in the monitoring and oversight required.

Question 4. I understand that FirstNet, in partnership with the NTIA–NIST Public Safety Communications Research Program, is engaged in research and development to help provide this network with the most up-to-date, safe communications technology. According to your documents, AT&T and FirstNet will use your new Innovation and Test Lab to test public safety devices and applications for the network. You also launched a Public Safety Innovation Accelerator Program and are planning other research activities. As you test technologies for deployment across the nation, and also develop innovative new technologies for first responders, one of the most important factors will be future-proofing the network. As technology evolves in the future, public safety agencies should be able to adopt the most cutting-edge technologies and use them seamlessly with FirstNet. How will you “future-proof” the network and devices to ensure that it is adaptable for decades to come? How does this factor in to your research and development strategy? Can you tell us more about the innovations in public safety technology we may see through FirstNet in the future? What devices and applications do you hope will be available to first responders nationwide in a fully modern network?

Answer. FirstNet's enabling legislation requires the NPSBN to evolve as technology advances. FirstNet's public-private partnership with AT&T will allow the network to do just that. In addition to the Federal Government's research and development (R&D) initiatives, such as those at National Institute of Standards and Technology's (NIST) Public Safety Communications Research (PSCR) program, National Telecommunications and Information Administration's (NTIA) Institute for Telecommunication Sciences labs, Department of Homeland Security's Office of Science & Technology, FirstNet will also leverage AT&T's own private R&D investments. All of these diverse R&D programs now have a unified platform for which to develop and commercialize their solutions with FirstNet's network and platform. Innovations such as geolocation application services, Z-axis location for in-building search and rescue, mission critical push-to-talk, proximity services for off-network mobile-to-mobile communication, and applications that span from volunteer firefighter management and coordination to iPhone body camera technology are just a few of the many advances on the horizon expected for the FirstNet network. It is an exciting time for public safety, now and many years into the future.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. CATHERINE CORTEZ MASTO
TO MICHAEL POTHE

Question 1. Does the Public Safety Spectrum Act effectively outline the proper guidance for FirstNet coordination needed between Federal law enforcement and state and local first responders?

Answer. FirstNet's enabling legislation required FirstNet to consult with local, state, federal, and tribal public safety entities. FirstNet is incredibly proud of the consultation program we have established and implemented over the past three years. We have dedicated consultation and outreach teams focused on local, state/territorial, regional, tribal, and Federal engagement, and have continually coordinated with and brought together the different groups in both small and large set-

tings. Through 2017, FirstNet has hosted over 1,600 public safety-focused events reaching over 200,000 local, state, federal, and tribal representatives through which we have continued to coordinate and plan how the network will function for all of our Nation's public safety disciplines. While the enabling legislation did not specifically outline coordination between Federal and state and local first responders, we believe it established an effective framework for engagement and consultation with public safety at the federal, state, and local levels that will benefit the public safety community nationwide.

Question 2. Given a joint response situation where First Responders of different disciplines and origin support a current event or crisis, what thoughts, preparations, planning or consideration is given to communications platforms or applications that are easily managed by those in command and easily used and understood by those in the field?

Answer. One key differentiator of the FirstNet network is that, for the first time, public safety has a unified platform where developers are incentivized to develop new and unique public safety applications due to economies of scale. We are already seeing new venture capital firms focused on public safety applications and a significant number of applications for NIST's Public Safety Communications Research (PSCR) Challenge Grants because of the inevitable network effects that the FirstNet platform will be supporting over the coming years.

Much thought and preparation has gone into ensuring that those in command and in the field will have the tools necessary to be able to do their jobs more effectively and efficiently. FirstNet's Public Safety Advisory Committee, for instance, is made up of local, state, and nationwide public safety representatives whose purpose is to advise FirstNet on exactly these kinds of issues. Additionally, as mentioned before, PSCR is looking long-term at how communications platforms will change into the future and has been provided with Research and Development funds through the FirstNet legislation specifically to research and prototype the future state of on-the-ground public safety communications. Finally, FirstNet takes seriously its mission to be public safety's voice in standards bodies that shape the next generation of networks and manufacturing designs. FirstNet will continue to participate on these standards bodies to ensure that first responders are always taken into account when new standards are promulgated.

Question 3. While I appreciate the principle that FirstNet will be financially sustainable, what assurances do we have that the assessment of fees on public safety will be reasonable and continue to be reasonable, considering some of the budgets state and local communities are currently wrestling with? The same goes for the potential of usage of the spectrum to expand or improve rural wireless services. Can we be assured that there won't be continued high costs for our rural constituents who may appreciate the access, but not the cost of this service?

Answer. Congress thought ahead on exactly this question when they passed FirstNet's enabling legislation in 2012. By not requiring a single public safety entity or individual to purchase FirstNet services, even once the network was up and fully operating, Congress ensured a competitive pricing landscape for the foreseeable future.

FirstNet must compete for public safety's business in all states and territories, and this competition is already resulting in pricing benefits for public safety, while simultaneously giving public safety access to applications and security that they have not been previously offered. Congress' model for FirstNet's public-private partnership is working by increasing competition and lowering prices and barriers to access for public safety.

